THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION, INC.

Published for the Collector, Historian and Old Time Wireless Operator

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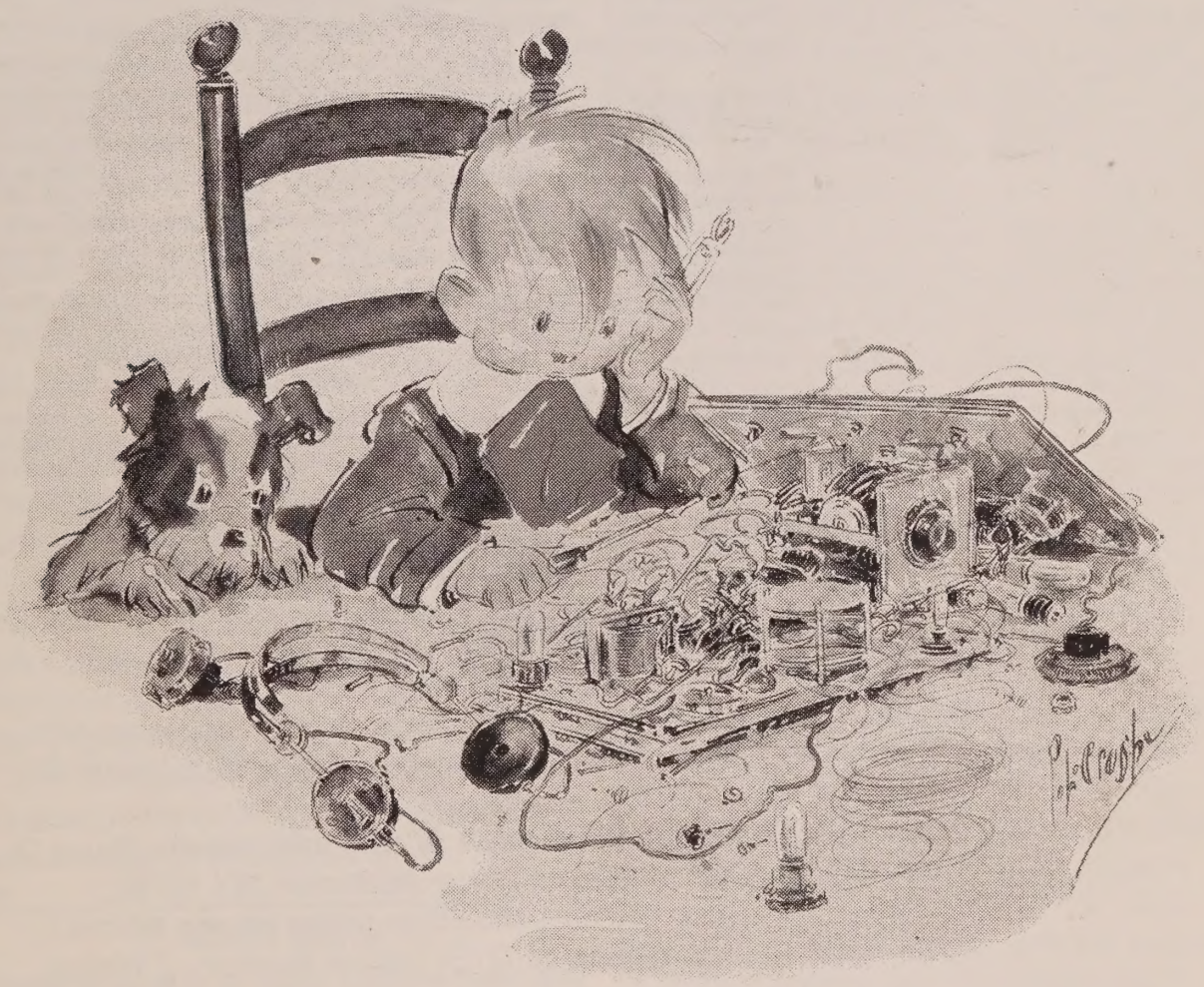

His Master's Vice

ANTIQUE WIRELESS ASSOCIATION, INC.

BOX E

BREESPORT, NEW YORK 14816

"The Old Timer's Bulletin" — The AWA Journal

The Old Timer's Bulletin is published approximately four times a year, on an all-volunteer basis, by and for members of the Antique Wireless Association, Inc. AWA is a nonprofit historical society founded in 1952 and chartered by the State of New York. *The Old Timer's Bulletin* is available through AWA membership. Its issuance is subject to change from time to time as to frequency, content, and size. This publication does not accept paid advertising. It is not liable in any way for any buying-and-selling transaction entered into as a result of its content.

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Please write legibly. Enclosing an SASE speeds replies.

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AWA official business, bulletin material and news of non-joint meets: Bruce D. Roloson, (President and Publisher), 2 Walnut Place, Apalachin, NY 13732, (607) 625-3031. (Exception: column material should go to the column editors.)

Orders for the *AWA Review* or back issues of *OTB:* Debbie Roloson, 2 Walnut Place, Apalachin, NY 13732.

Want ads, coordination of joint meets and slide/video shows: Richard Ransley (First Vice President), Box 41, Sodus, NY 14551.

Museum operation: Bruce Kelley (Curator), 59 Main St., Bloomfield, NY 14469.

Annual conference business: William Fizette (Second Vice President), RD 1, Box 55, Henryville, PA 18332.

Financial reports: Dexter Deeley (Treasurer), 8 Briar Circle, Rochester, NY 14618.

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FROM THE PUBLISHER

Bruce Roloson

• We have begun preparations for the August issue of the *OTB* which will feature the theme. "100 Years of Radio. We aske that you send any articles on Marconi or Wireless of the Marconi period, along with good-quality photos (B&W or color) of the same by June 10 so that they may be included in this historic issue.

• All the information you will need on the AWA Conference will also be in the August issue. Registration for this eagerly awaited annual event, along with the flea market, will be included. We call your attention to the agenda on page 9 and the notation that the conference will end with a luncheon Saturday afternoon. New this year are the museum hours on Saturday.

• In this issue you will find two listings that should be very important references in the future: "Headset Update" by Dick Macklewicz (page 38) and "The 201/201-A: Saga Finale" by Bro. Patrick Dowd (page 46). Though the listings are lengthy, we feel that they are important historically. Norm Smith presents some rare photos and documentation on RCA's experimental pocket-size transistor radios (page 51), and Marc Ellis' first equipment restoration column begins on page 30. Not to be overlooked are Bill Denk's first book reviews (page 18).

• Our sincere thanks to all the contributors to the *OTB* that make it the AWA's contribution to history.

COVER PHOTO

Eager to tune in to radio stations near and far, and maybe even from another country, a young lad makes his first attempt at putting together a receiver. Note that there's no instruction manual visible which is probably why he has such a perplexed look on his face. This charming drawing is from the cover of the March 1924 issue of Radio Broadcast *magazine.*

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AWA NEWS

CALENDAR

(AWA-sponsored event dates in **bold** type)

May 5-7 ..... HVRA-AWA Meet, Houston, TX
May 6 ..... AWA Spring Meet, Bloomfield, NY
May 6 ..... AWA Board of Directors Meeting at Spring Meet
May 12-13 ..... AWA Nother NJ Spring Meet, Schooley's Mountain
May 12-13 ..... Indiana Historical Radio Society, 24th Annual Spring Regional Radio Festival, Kokomo, IN
May 19-20 ..... Radio Daze '95 at Hotel Seville, Bloominton, MN
May 19-20 ..... Rochester Hamfest, Rochester, NY
June 25 ..... Pennsylvania Meet, Buckingham, PA
July 7-9 ..... Extravanganze '95, Lansing, MI
July 9 ..... GRAMS Hamfest, Alexander, MI
July 15 ..... New Jersey Meet & Auction, Hightstown, NJ
Aug. 12 ..... NFWA-AWA Meet, Amerst, NY

OTB POLICY ON PROMOTING EVENTS

For joint club-AWA meetings (with video/ slide shows, etc.), please send the information to Richard Ransley, coordinator. For stand-alone club events, send items to the OTB publisher whose address is on the inside front cover. The forinat is not critical, timeliness is. This section of the OTB is the last to close, about 4-6 weeks before the date of the next issue.

ANTIQUE WIRELESS ASSOCIATION NEW YORK SPRING MEET

Saturday, May 6

Local AWA meet/dinner/sale at AWA Annex, and American Legion Hall, Rts. 5 & 20, Bloomfield, NY, 2 mi. E. of AWA Museum. 9 a.m.-noon: flea market; 10:30 a.m. at Annex; auction of misc. equip. (Receivers, speakers, amplifiers, detrius}; noon: buffet ($7, incl. auction card); 1 p.m.: auction of members' equip., direc. sale, $1 auction card required. Dinner reservations a must before May 3, none at door. Info (send no money): Bruce Kelley, 59 Main St., Bloomfield, NY 14469, (716) 657-7489, or Lauren Peckham, Box E, Breesport, NY 14816, (607) 739-5443.

ANTIQUE WIRELESS ASSOCIATION NORTHERN NEW JERSEY MEET

May 12-13, 1995

The ninth meet will be at the same location as last year, The Inn at Schooley's Mountain, Rt. 517, 4 mi. S. of Hackettstown & 2 mi. N. of Long Valley. Fri. dinner; plenty of market space; coffee, donuts and Danish Sat. morning; Sat. buffet dinner. Special program for radio collectors following dinner is planned. Panther Valley Motor Inn available Fri. night for thos wishing to stay nearby. Reservations must be made early; there's a shortage of rooms for the weekend. For info send SASE to Lauren Peckham, Box E, Breesport, NY 14816, or call (607) 739-5443.

RECURRING MEETINGS

• **California Historical Radio Society** — Quarterly swapmeets in Ampex Corp. parking lot, Redwood City. Gates

open 8:30 a.m. Regional events general address is: CHRS, PO Box 31659, San Francisco, CA 94131. 24-hour voicemail info: (415) 978-9100. (Info from Mike Adams.)

• **Delaware Valley Historic Radio Club** — This SE Pennsylvania club meets, with equipment auction, 2nd Tues. of month at North Penn Amusement Building, 105 Main St. (Rt. 113), Souderton. Membership $5/yr. For info: PO Box 624, Lansdale, PA 19446, or Jay Daveler, (215) 368-2520.

• **Houston Vintage Radio Association** — Meets 2nd Tues. each month (except Jan. and Dec.) At Lai Lai Restaurant, Tides II Motel, Houston Medical Center, Main and Holcombe Sts., Houston, TX. Meetings include auction/program, 7-10 p.m. Assoc. publishes Grid Leak quarterly, monthly activity announcements. Membership $15/yr. Write: HVRA, PO Box 31276, Houston, TX 77231-1276, or call Richard Collins, (713) 778-0721.

• **Hudson Vallev Antique Radio & Phono Society** — Meets 3rd Thurs. of month, 7 p.m. Meeting, swapmeet, and membership info: HARPS, PO Box 207, Campbell Hall, NY 10916, or call John or Linda Gramm at (914) 427-2602.

• **Mid-Atlantic Antique Radio Club** — Meets monthly at New Hope Seventh Day Adventist Church, Burtonsville, MD, Sundays, 2 p.m.. Contacts: Lloyd Kendall, (703) 471-6143, or Joe Koester, (301) 725-4229.

AWA NETS (EST)

PHONE:

Sun. 7247 kHz SSB, noon (NCS: N4FS); 3837 kHz, 3837 kHz, AM 4 p.m. (NCSs: W2ZM & W2AN)

Tues. 14274 kHz SSB, 2:30 p.m. (NCSs: KC3YE and W0FXY) 3837 kHz SSB, 8 p.m. (NCS N4FS)

Mon.-Wed.-Fri.: 3867 kHz, 9:30 a.m. (NCS: W2SHN)

CW:

Daily, 4 p.m., 7050 kHz (NCS varies)

First Wed. of each month, 8 p.m., 7050 kHz

2-M REPEATER (Rochester area):

Mon., 7:30 p.m. (NCS: W2ICE)

Receive 146.820 MHz; transmit 146.220 MHz

• **New Jersey Antique Radio Club** — Meets 2nd Fri. each month, 7:30 p.m. Holds three annualswap meets. Contact (send SASE): Tony Flanagan, 92 Joysan Terr., Freehold NJ 07728, (908) 462-6638.

• **Oklahoma Vintage Radio Collectors** — Meets 2nd Sat. each month, Spencer's Barbecue Restaurant, NW 63rd and May Ave., Oklahoma City. Dinner/socializing, 6 p.m.; meeting at 7. Membership, $12/yr., includes monthly Broadcast News. Info: SASE to OKVRC, PO Box 72-1197, Oklahoma City, OK 73172-1197, or call (405) 722-0595 or (405) 7554139 eves.

• **Ottawa Vintage Radio Club** — Meets monthly (except June and July) in Conference Room, Ottawa Citizen, 1101 Baxter Rd., Ottawa, Ontario. Contact: Tom Devey, 601-810 Edgeworth Ave., Ottawa, ON K2B 5L5, (613) 828-5152. Membership: $10 Canadian/yr.

• **Southern California Antique Radio Society** — New meet times/places: May 20, San Luis Obispo, joint meeting); June 17 & Aug. 19, Los Angeles, (business & flea market). Info: Floyd Paul, (818) 242-8961.

SERVICE SOURCES AVAILABLE

The AWA Source Sheet, a listing of parts suppliers and services for the radio collector, is available for the cost of a business-size (No. 10) SASE sent to AWA, Box E, Breesport, NY 14816.

NEW VIDEO PROGRAM...

...available for club programs. Mike Adams has given the AWA a VHS copy of his production on radio entitled The Charles Herrold Story, Broadcasting's Forgotten Father. It is a fascinating documentary covering the early work of a prioneer who started broadcasting in 1912. This program and others are available from Dick Ransley, Box 41, Sodus, NY 14551.

Continued on page 6

— CALENDAR

Continued from page 5

HVRA-AWA
HOUSTON VINTAGE RADIO ASSOCIATION

May 5-7, 1995

Meet at Howard Johnson Hotel at Hobby Airport (airport entrance). Fri. auction, 7 p.m., for radio parts, plastic radios, ham equipment, tubes & test equip. Sat. main auction at 12:30 p.m. for the more desirable radios, wooden sets, wireless, broadcast, catalin, etc. Sat. evening banquest with Dave Ward, local TV news anchor speaking. Swapmeet Sun. From 8 a.m.-noon. Lodging at Howard Johnson at $45 per night. For more info: Richard Collins, 8722 Reamer St., Houston, TX 77074, (713) 778-0271.

INDIANA HISTORICAL RADIO SOCIETY 24TH ANNUAL SPRING REGION RADIO FESTIVAL

May 12 & 13, 1995

Festival at Ramada Inn, Kokomo, IN, 45 mi. N. of Indianapolis. Pre-registration $8/family at same address, $10 at door. Fri.: indoor/outdoor flea market all day, restoration seminars, tour & Charles Harrold documentary, ladies luncheon with guest speaker, 8-category old equipment contest, banquet with prominent Indiana broadcaster as guest speaker. Sat.: outdoor flea market all day, donation and consignment auction 1-6 p.m. Contact: Herman Gross, W9ITT, (317) 459-8308.

NEW JERSEY MEET & AUCTION

Sat., July 15

Auction: Indoor catalog auction at noon featuring members' gear expected to include estate material. Sellers may bring other gear on day of event. Advance catalogs available mid-June; final version provided on site. Equip. contest: Added feature this year. Entries welcome. Location:Hightstown Country Club just off Rt. 33. From NJ Turnpike go E. on Rt. 33 about 200 yds. just past Mom's Peppermill restaurant, continue ¼ mi. to 1st jughandle, come back W. At first light bear right onto Monmouth St., go 300 yds. to country club on left. Rates to outdoor sellers: $15 per table ($3 discount to NJARC members). Food/beverages avail. Mention "radio meet" for discount at Town House Motel, Rt. 33 (800) 922-0622, or (609) 448-2400. Also, Ramada Inn across street (609) 448-7000. Contact: Kathleen or Tony Flanagan, 92 Joysan Terr., Freehold, NJ 17728 (908) 462-6638.

PENNSYLVANIA MEET

Sun., June 25

Delaware Valley Historic Radio Club indoor/outdoor swapmeet & equip. Display, 8 a.m. - 1 p.m., Tyro Grange Hall, U.S. Rt. 202 and PA 413, Buckingham (Bucks County), PA. Site on 413 just N. of intersection. Cvonvenient to Phila. & PA Turnpike exit 27. For info, vendor registration: (610) 827-9757.

MICHIGAN ANTIQUE RADIO CLUB EXTRAVAGANZA '95

July 7-9, 1995

Event at Holiday Inn South/Convention Center features open air flea market (400 spaces); informative programs; contest; women's luncheon; auctions (last year 205 lots sold for a record $34,035); raffles; banquet; special performance by Geriatric Six Plus One, a well-known area muscial group; etc. Special Holiday Inn discount rate arranged for participants. Flying in? Lansing airport just a few minutes away from Inn (shuttle service avail.). During auction there will be a special sale of an Atwater Kent Model 10 breadboard with an Atwater kent horn speaker and a new ARBE-III power supply donated by Dave Snow of Antique Radios Inc. For event brochure write: Michigan Antique Radio Club, PO Box 585, Okemos, MI 48805; or call: Jim Clark, pres., (517) 349-2249. Fax: (517) 349-4059.

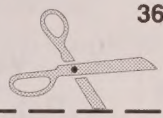
Continued on page 35

OTB BACK ISSUES

The following back issues of *The Old Timer's Bulletin* are available at $3 each postpaid, with a 20 percent discount for 6 or more issues and 30 percent off for 12 or more. The nine special-theme issues contain the normal columns and news, plus a core of features on a particular topic area. The number of special-focus pages in each issue is listed below. Index to *OTB* volumes 20-34 and the *AWA Review* volumes 1-8, free on request with purchase. Please indicate alternative choices when ordering back issues of *OTB*.

VOLUME AND NUMBER

20-3 Muchow Collection/J.F. Arnold Receiver
22-2 John Stone Bio/Sylvania Tube History
22-3 Radiola III Factory Mods/Cardwell History/ SCR-270 Radar/SE-1420 (IP-501) Receiver
22-4 Cutting & Washington History
23-1 Magnavox, 1911-31/Amateur Radio Stamps
23-3 AK Horn Speakers/Wehnelt Cathode
25-3 RCA 630 TV/French Cable Co./1930 Receiver
25-4 Four-tube Superhets/Comet Pro Receiver
26-1 S-M "Around the World Four"/Cockaday BC Receiver/Building a Rotary-Gap Xmtr
26-2 National FB-7 I/L.L. Israel Bio/W'house RC
26-3 National FB-7 II/Radio in S. Africa/Mercury Super 10/Building a 1929 Receiver
26-4 Gilfillan History I/Sargent Model 11 Rcvr
27-1 Gilfillan History II/Schickerling Tubes
28-1 Dynergy AC-Powered Radio/Pilot TC-37 TV
28-2 '26 Radiomovies Today/National AGS I
28-3 Dowd Tube Collection/National AGS II
28-4 SE-1950 Radio Compass/National Sliding-Coil Receivers/Collecting Radio Batteries
29-1 Philco 17 Restoration/ZL2JJ '34 Station
29-2 Fada 460 Restoration/3ZO 1922 Station
29-3 Moorhead Tubes I/British '30s TV I
29-4 Moorhead Tubes II/British '30s TV II
30-1 GE Octagon TV Set/TR-1 Transistor Clones
30-3 **Military Equipment Special** - 17 pgs. of 48
30-4 **Broadcast Receiver Special** - 12 pgs. of 48
31-1 **1903-20 Wireless Special** - 5 pgs. of 48
31-2 **Restoration Special I** - 20 pgs. of 56
31-3 **Tube Special** - 19 pgs. of 48
31-4 **International Special I** - 11 pgs. of 48
32-1 **Communication Gear Special** - 18 pgs. of 48
32-2 An HRO Story/Loewe Tubes/GE M-81
32-4 Marconi V24 Valve/HRO in British Army
33-2 **40th Anniversary Special** ("Best of OTB, 1960-82") - all 48 pgs., incl. RCA Metal Tubes
33-4 Scott Special Rcvr/National Power Units
34-1 British Crystal Sets/National Power Units
34-3 **International Special II** - 20 pgs. of 64
34-4 Bell Labs Transistor Set/"Larkspur" Radios
35-1 Radiola & Aeriola Grand/German WW II Magnetrons & Avionics/Tech-Manual Art
35-2 Van Horne Tube Co./Philco TV Designers/ Foreign "HROs"/1200- & 1600 Series Tubes
35-3 Radiola 17 & 18/1929 Regen/G & R Valve Co.
35-4 Negatron/Mercury Super Ten/The Breting 14/ James Millen Memorial Station
36-1 Orrin Dunlap's Lab/Kolster K23/Bush & Lane Radio



ORDER FORM — *AWA REVIEW* AND *OTB*

Please send the following volumes of the AWA Review (Price postpaid in US and Canada. Reviews — $13 for one volume; $23 for two; $33 for three ($14.50, $24.50, or $34.50 elsewhere.):

_____ Copies of Vol. 8 _____
_____ Copies of Vol. 7 _____
_____ Copies of Vol. 6 _____
_____ Copies of *OTB* back issues at $3 each (please specify issues by volume and number)

_____

_____

Alternate Choice(s) _____

Optional: Extend my AWA membership by 2 years ($22 US & Canada, $30 foreign). _____

TOTAL _____

Name _____

Address _____

_____

_____

Please make checks payable to AWA. Mail to **AWA, 2 Walnut Place, Apalachin, NY 13732**

ANNUAL CONFERENCE

THRUWAY MARRIOTT, ROCHESTER, NY, SEPT. 6-9, 1995

WELCOME BACK! At the 34th annual conference, collectors and history enthusiasts will convene, exchange equipment, and learn more about the development of radio and electronics. If you have never been to the yearly "reunion," why not give it a try? Rochester (Henrietta) is just north of upstate New York's beautiful Finger Lakes region, easily reached by car or plane. The site is 26 easy miles from the AWA Museum at Bloomfield.

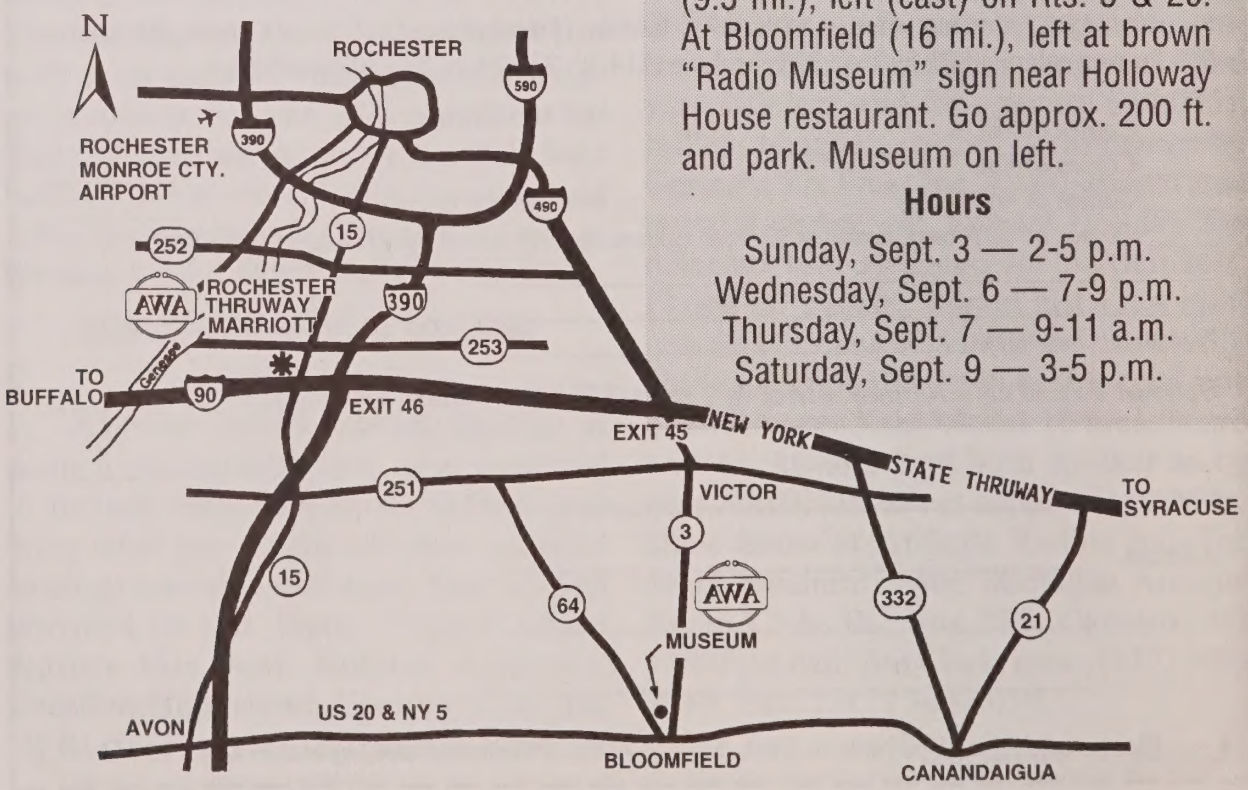
Advance registration is encouraged. This will allow preassembly of registration material for quick check-in, and preassigmnent of flea market spaces. Preregistration, using the enclosed card, can be made through Richard Ransley, Box 41, Sodus, NY 14551 before August 28th. Unlimited registration at the door.

The Thruway Marriott is a full-sized, full-service hotel. It offers special nightly rates ($80 single, $90 double, $90 triple, $100 quad) up to August 15. For info or reservations, call (716) 359-1800. The Marriott has high-quality restaurant facilities, and other lodging and eating places are nearby.

The hotel is reached from Exit 46 of the New York State Thruway (1-90): take I-390 north to NY 253 west, to NY 15 south. For visitors arriving by air, the location is about seven miles or 15 minutes from the airport. There is shuttle service, 7 a.m.-11 p.m. (specify the Thruway Marriott).

The special theme for this year is "100 Years of Radio."

Conference Chairperson: Bill Fizette
Program Chairperson: Lauren Peckham
Contest Chairperson: Ralph Williams



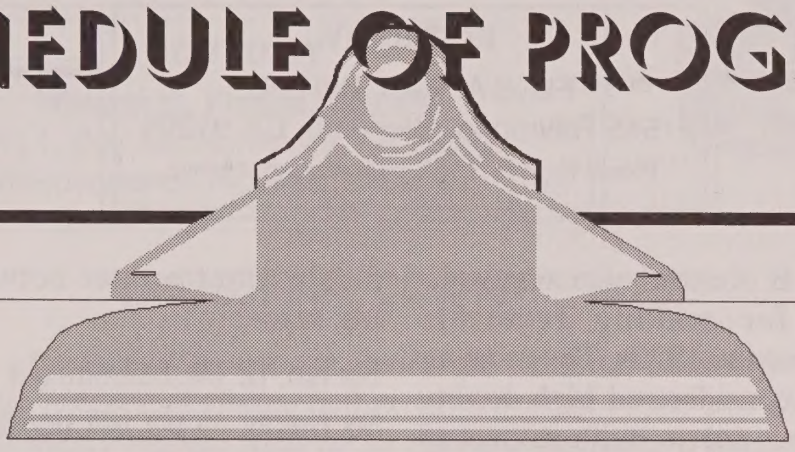
AWA Electronic Communications Museum
Village Green, Bloomfield, NY

Refer to map at left. Directions from hotel: Right (south) on Rt. 15. At Avon (9.5 mi.), left (east) on Rts. 5 & 20. At Bloomfield (16 mi.), left at brown "Radio Museum" sign near Holloway House restaurant. Go approx. 200 ft. and park. Museum on left.

Hours

Sunday, Sept. 3 — 2-5 p.m.
Wednesday, Sept. 6 — 7-9 p.m.
Thursday, Sept. 7 — 9-11 a.m.
Saturday, Sept. 9 — 3-5 p.m.

1995 AWA CONFERENCE SCHEDULE OF PROGRAMS



WEDNESDAY, SEPTEMBER 6

1:30 p.m. — Mike Adams, "RadioTelephone: The First 20 Years"
3:00 p.m. — Bart Lee, "Radio Communications: From 1895 Onward" (West Coast Operations)
4:30 p.m. — Murray Willer, "Telegraphy: History and Collecting"

THURSDAY, SEPTEMBER 7

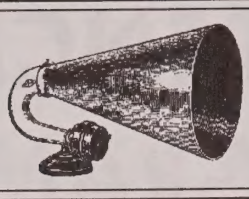
9:00 a.m. — Communication Equipment Auction with Col. Ed Gable
10:30 a.m. — John Terrey Panel Discussion: "Collecting Radio Books and Magazines"
1:00 p.m. — Marc Ellis, "Evolution of the Radio Receiver" (1920s to WWII)
3:00 p.m. — Jim & Felicia Kreuzer, The Marconi Story and Display of Rare Equipment

FRIDAY, SEPTEMBER 8

9:00 a.m. — Auction (Tubes, Books, Parts, Equipment)
4:00 p.m. — Amateur Activites with Bob Raide, W2ZM
7:00 p.m. — Banquet and Presentation of Awards

SATURDAY, SEPTEMBER 9

9:30 a.m. — Larry Babcock, "The Federals That Are Seldom Seen" (Info on Rare Federal Equipment Made in Buffalo, NY)
11:00 a.m. — Bruce Kelley: "Radio, Wireless and Electrical Appratus From the Late 1800s to 1912" (Members May Bring Items For Display and Discussion)
12:30 p.m. — Informal Luncheon. A Great Time to Visit With Friends as it Will Be the Conference Closer for This Year!
2:00-4:00 p.m. — AWA Museum Open



THE LOUDSPEAKER

EDITED BY

Floyd A. Paul, W6THU
1545 Raymond, Glendale, CA 91201
Please include SASE with correspondence.

The Colin B. Kennedy Co. was well-known for making receivers throughout the 1920s. The receiver product line is considerered high quality by collectors, but not so, with respect to their horn speakers (author's conclusion).

The company's attempts to invade the horn speaker market were minimal and its advertisements of its horns were quite sketchy. The descriptive write-up of the first advertised horn, an upright, straight neck and bell model, was "The same as used in new Kennedy furniture models. Remarkable fidelity of reproduction with total absence of unpleasant distortion. No separate batteries required. Price complete with 6 ft. cord, $30.00."

These words were all common to the four magazine ads published in October 1923 in *Radio, Popular Radio* and *Radio Broadcast* magazines, and in November in Radio News.

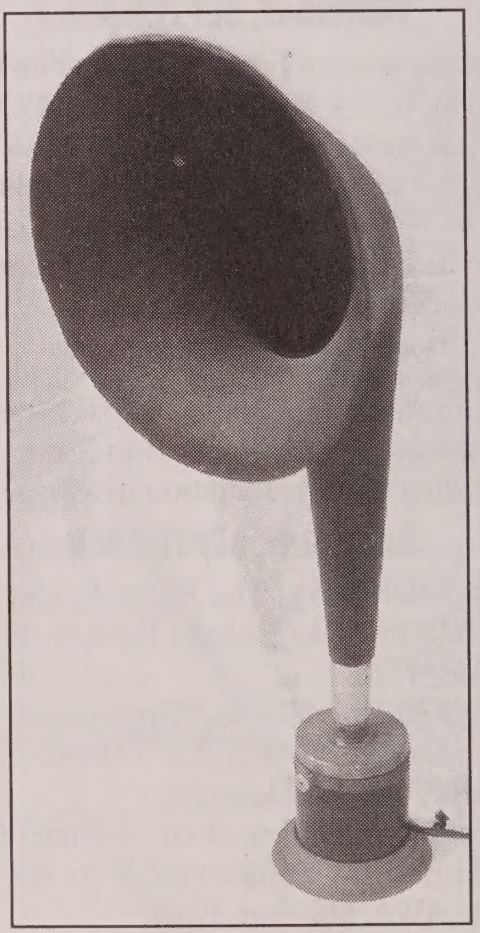
Finally, an August, September, and November 1925, set of ads in *Radio Retailing* identified and applied model numbers to the three horns that were being made:

Six Ten, 12" dia. bell, straight neck, $20

Six Twenty, 15" dia. bell, goose neck, $25

Six Thirty, mahogany cabinet model with grilled front, $40

The author has only seen eight ads in magazines over the years for Kennedy horns, and has never seen a Six Twenty or Six Thirty model horn.



The author's horn has a 10-inch diameter bell, but it is assumed to be a forerunner to the Six Ten which is noted to have a 12-inch diameter bell. It is identified as a Model 920 in a November 1924 listing in the Electrical Record radio supplement.

It is not known whether Kennedy made some or all of the major component parts of its speakers. A photo of the author's horn is shown. Its straight neck and bell are made of fibre (black), the cylindrical base has a permanent magnetic driver, and the base metalic parts are pot metal.

THE COMMUNICATIONS RECEIVER

EDITED BY
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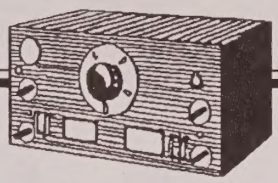


THE NATIONAL COMPANY'S NC-57

Introduction — *To those of us who associate the National Company of Malden, MA, with the princely HROs and sliding coil receivers of the 1930s and 1940s, the arrival of the NC-57 probably created little or no interest. However, it appears to have filled a need for an extended-range receiver which could be used for either casual short-wave listening or monitoring of the SW bands by the various communications services. In this article, author Wayne Childress introduces us to this common but underappreciated and little known set.*
— K3ZJW

By Wayne Childress*

Before the end of World War II, National's receivers came in two basic sizes, small and large, and even its medium-priced receivers had quite a bit of bulk to them. The end of the war brought more streamlined cabinets and smaller packages to the world of communications receivers, and facing some stiff competition from Hallicrafters and its S-40 receiver, National designed a streamlined, medium-priced, mid-sized receiver, and dubbed it the NC-57.

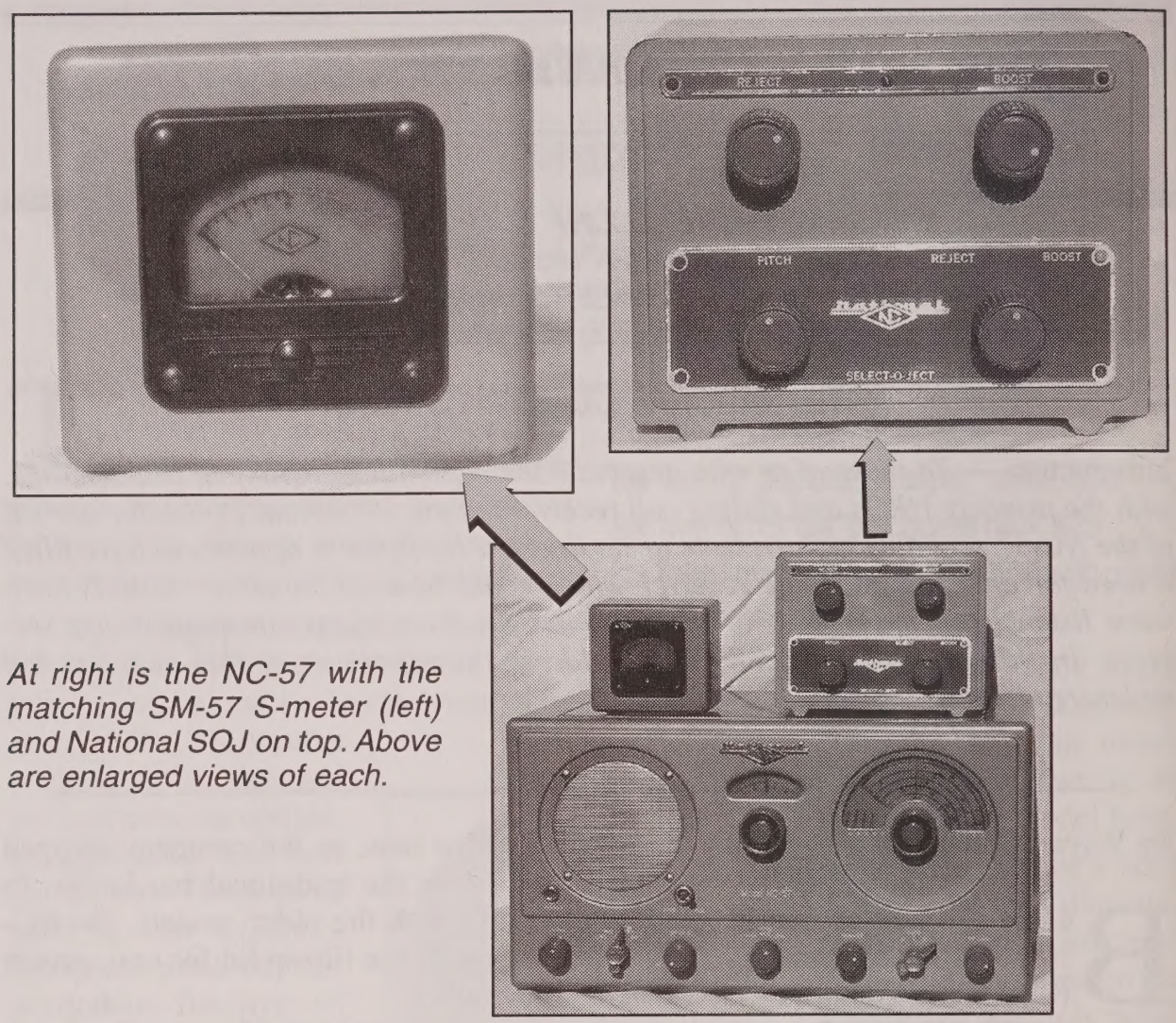
The NC-57 was first advertised in the November 1947 issue of *QST* with a price of $89.50. At the time it was National's low-end superhet (the NC-33 would appear early in 1948.) The cabinet sported the new National gray enamel paint, rounded corners, and was dramatically downsized. The half-moon dial and smaller bandspread dial added to the NC-57's modernized styling. The round knobs were also new, as the company stepped away from the traditional bar knobs. In keeping with the older models, the NC-57 retained the lift-up lid for easy access to the tubes.

The original NC-57 was a five-band, nine-tube superhetrodyne covering 0.54 to 54 mc. The model number was probably derived from "5" bands and "7" tubes, as the manual describes it as a seven-tube receiver plus voltage regulator and rectifier. [1] The tube complement is: 6SG7 rf, 6SB7Y converter, 2 6SG7 ifs, 6SL7 1st audio/bfo, 6H6 detector/avc/noise limiter, 6V6 audio, and the OD3 VR tube and a 5Y3 rectifier. Earlier models may have used a 6SN7 in place of the 6SL7, as some chassis have 6SN7 stamped on the chassis, but has been inked out.

The RF gain, tone, antenna trimmer, band, on/AF gain, send/receiver, CWO/MVC/AVC/ANL, pitch, main tuning and bandspread are controlled from the front panel. Switching to the ANL (automatic noise limiter) position automatically employs the AVC. The headphone jack is also

Continued on page 12

**Mr. Childress may be reached at 1903 Jerome Place #3, Helena, MT 59601*



At right is the NC-57 with the matching SM-57 S-meter (left) and National SOJ on top. Above are enlarged views of each.

Continued from page 11

on the front panel and supplies audio from the output transformer. The main tuning dial is gear driven, while the bandspread dial has two dial cords separated by a counterbalance.

Two auxiliary octal sockets and the antenna/ground terminals are located on the rear of the chassis. One of the sockets is for external accessories and for a phono hook-up. The other comes with a jumpered plug needed for normal AC operation. By rewiring the plug this socket can also be used to connect a remote SR (send/receive) switch, or can be usedfor operating the receiver from emergency external power, a 6-volt storage battery and a 180- 250-volt B supply.

National made two accessories for the NC-57; the SM-57 S-meter and the Select-O-Ject, both finished with the matching gray color. The Select-O-Ject, produced sometime after 1949, functioned "as a selective amplfier, an oscillator, or a single-frequency rejection filter."[2] Thus the name. It came in three models, the -1, -2, and -3, all electrically the same except for how the output leads are terminated. While designed for use with the NC-57, the National SOJ could also be used with other receivers.

Over the four years of its production, the NC-57 underwent several changes. The NC-57B is physically the same as the original NC-57 and has no major circuit differences, but does have a few minor wiring changes to the accessory socket to allow direct plug-in of the SOJ-3, as well as the SM-57 and a phono input. Early versions were identified by an ink stamped

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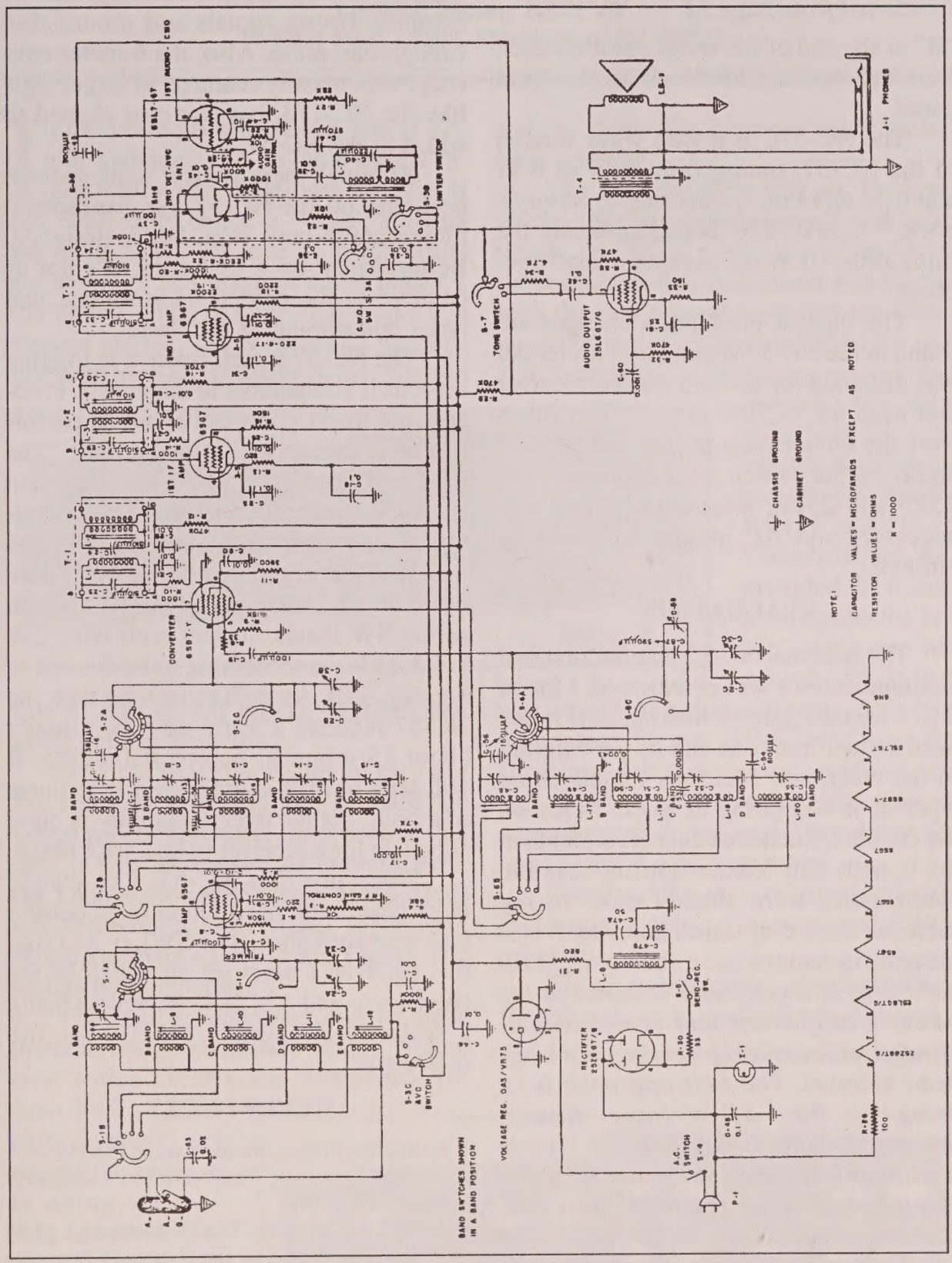


The circuit of the NC-57M, AC-DC version.

— NATIONAL NC-57

Continued from page 12

"B" at the end of the serial number; later, National would add the -B to the front panel.

The NC-57C is a long wave version of the NC-57, tuning from 0.19 to 0.41 and 0.54 to 34 mc. According to Moore's book,[3] the NC-57C is electronically the same as the -B model except for band coverage.

The biggest production changes are found in the NC-57M version. This model was designed for use as a marine receiver and used an AC/DC circuit. The tubes were the same except for the rectifier and audio output which were changed to a 25Z6 and 25L6, respectively. The rear accessory and AC jumper socket were omitted.

EVALUATION

The National NC-57 was the first real communications set I ever owned. I found it in a friend's garage, looking as if it had been kicked from one end of the building to the other, and I had my doubts about whether it was going to work. I cleaned the couple of inches of dust off it and then hit it with 120 VAC, figuring that the electrolytics were already shot. To my surprise, it not only didn't hum, but it was bringing in stations like a champ! *(K3ZJW note: This is a good way to burn out the power transformer, and is not recommended procedure for powering up a long-dead receiver. The best approach is to bring up the AC voltage slowly, preferrably with a Variac, while closely monitoring the B+, thus allowing the electrolytics to gradually reform. Mr. Childress was lucky.)*

Three main features separate the NC-57 from other receivers in its price range. In keeping with National's earlier dials, the gear-driven, main tuning dial has a very positive action and logs accurately across the dial. The addition of the antenna trimmer is helpful and it actually works, strengthing weak signals or detuning strong signals and minimizing background noise. Also, the 6-meter coverage was usually featured in larger rigs, like the NC-173, but National elected to add it to the NC-57.

Although there are few weak spots to be found on the NC-57, the bandspread tuning could have been better designed. Being driven by a dial cord, it's not as positive as the geared main tuning, and has a fair amount of backlash.

The NC-57's performance in logging stations is comparable to larger sets. Probably the truest statement about its performance comes from a National ad: "The SWL will log DX stations with ease and clarity. In fact, any operator now operating a communications receiver will find the NC-57 essential as a standby."[4] I have found it to be excellent on the BC as well as the SW bands. It does well with CW but does leave something to be desired in logging SSB. As with most tube rigs, the NC-57 requires a warm-up time, usually about 15 minutes, before stabilizing. It will tend to drift slightly over the course of a hour, but the overall stability is quite adequate for a receiver in this price range.

Since my first NC-57, I've owned three others and have found them consistent inperformance. The SWLer will find this receiver a great set on which to log short wave and AM DX, as well as being a National Company classic for the collectcor.

REFERENCES

1. Instruction Manual for the National Model NC-57 Radio Receiver, The National Company, Malden, MA, 1947.

2. Villard and Weaver, The "Selectoject," *QST*, Nov. 1949. Reprinted by the National Company.

3. Moore, *Communications Receivers: The Vacuum Tube Era,* 2nd Edition, p. 87, RSM Communications, 1991.

4. National NC-57 advertisement, *QST,* Nov. 1947.

CONSTRUCTING A PRE-WAR ZENITH CAGE ANTENNA

Ludwell Sibley, KB2EVN
44 East Main Street, Flemington, NJ 08822

In the years prior to World War II Zenith manufactured its table model radios with a wire loop-type antenna. It was commonly called a "cage" antenna due to its heavy reliance on wood struts and supports and presboard end plates. I don't know when or with what model this practice started, but it preceded the flat-type wire loop so prevalent in the '50s and '60s. It was in full bloom by 1939 and lasted until at least 1942.

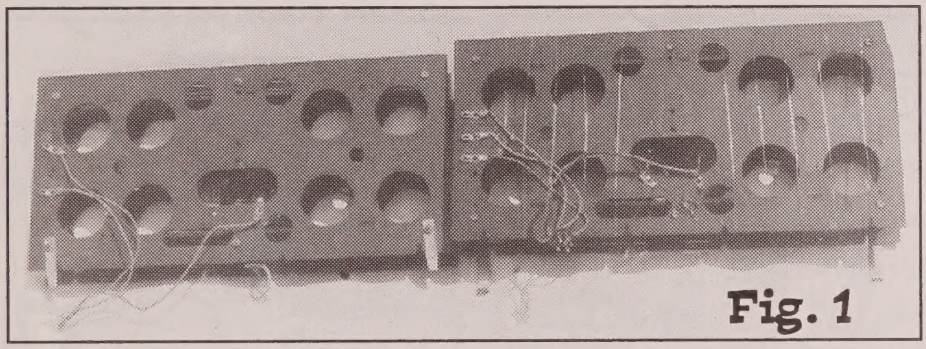


Fig. 1

Over the years the design of the cage was changed only slightly, probably to reduce production costs since even at that time it was expensive to manufacture. **Fig. I** above shows the author's loops (left) obtained from a 1940 model 75529, and the loop used on a 1942 model 6S632. The similarity is apparent.

The need to construct one of these antennas became manifest when I "fell in love" with a 7S529 at the New Jersey Antique Radio Club's 1993 meet. I bought the radio in an aging state — only one knob was present, push buttons were broken, and I didn't know that the antenna was missing since I thought it had "a" and "g" posts like scores of other units I have restored.

The hunt for parts was on. Unfortunately, after six months of ads and radio shows, no 7S529 parts showed up. After some evaluations, restoration was started with the ever present hope that the future would bring the parts. I recapped the unit and constructed a temporary antenna and the radio was operable. Now the concentrated search for parts began. Finally Ron Kudasik of Chambersburg, PA, provided the means to complete the set. He sold me his prized 7S529 that was complete but contained a defective power transformer. After I analyzed the situation I felt that restoration of the new unit should also be undertaken, even if parts were still missing. Thus arose the need to build a cage antenna.

Construction was relatively simple and requires only a few tools and a little patience.

Fig. 2 below shows the dimensions for the end plates and spacers. The end

Continued on page 16

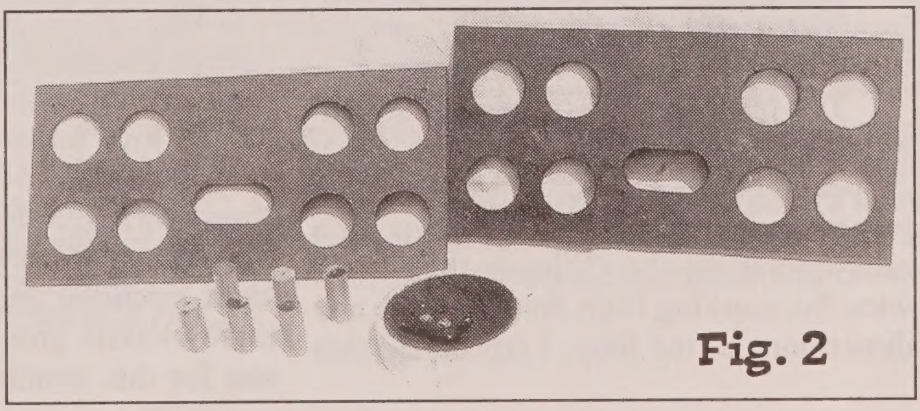


Fig. 2

— ZENITH CAGE ANTENNA

Continued from page 15

plates are constructed of one-eighth-inch thick masonite (hard surface one side) while the six spacers are three-quarter-inch diameter wood dowels with a hole drilled through the center. The large holes in the plates are made with a 1¾-inch diameter hole saw while the elongated center holes are 1¼-inch. These holes are required to permit ventilation of the set when the antenna is in place.

The inner loop was more complex. It is made of a small piece of PVC piping with an outside diameter of 4½ inchs. This form was fitted with a piece of one-quarter-inch or three-eighths-inch plywood to the inside and was held in place by epoxy cement and a few small escutcheon pins. The surface of the plywood was mounted flush with the back of the PVC piping form. A two-terminal screw terminal board was attached to the exterior surface of the plywood. The figures show some of this detail.

The last mechanical assembly was to attach the five solder lugs — #4 brass screws and nuts with lockwashers at each location. These provide the connections to the radio chassis.

The inner loop was wound first with wire that appears to be 36 gauge. I say "appears" because the structure of the factory antenna prevented me from putting a micrometer on the "thinner than hair" wire. So, working from the resistance and dimensions of the loop, I concluded that 135 closely would turns of #36 enameled wire for a total length of approximately five-eighth-inch on the inner form was as close as I could get. Once wound and sealed in place with Q dope the inner loop was attached to the back plate with epoxy and a few escutcheon pins.

At this time I gave both plates and spacers a heavy coat of varnish to seal out moisture and prevent dimensional changes. No varnish was applied to the inner loop since this would lower the Q of the unit. The Q dope was adequate for this coil. Then the frame was assembled and it took on a semi-finished look.

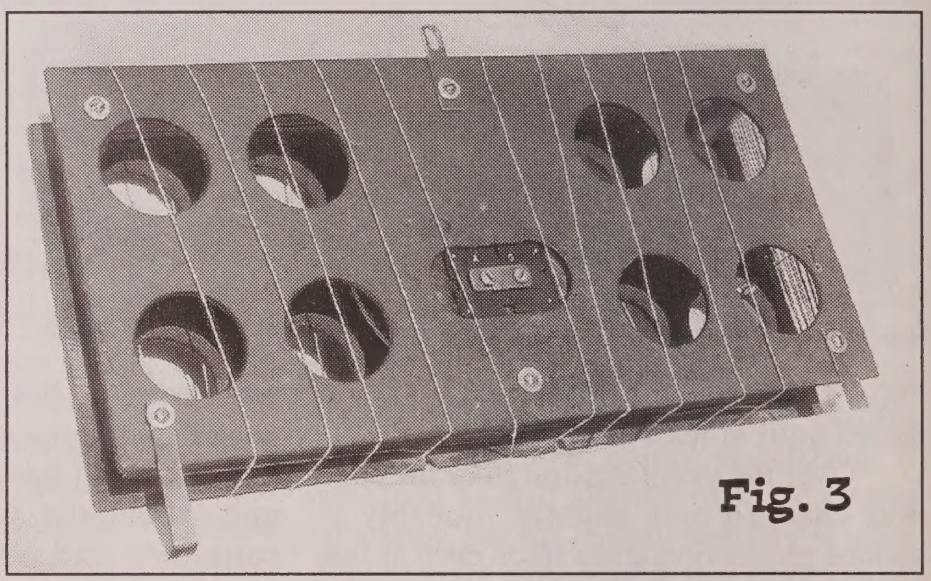


Fig. 3

The main antenna (Fig. 3) consisted of 18 turns of #24 enameled wire equally spaced over 1½ inches. It provided the basic loop. A tap was provided 5 turns from the top end of the wiring. The tap must be insulated from adjacent turns. A drop of epoxy provided the means.

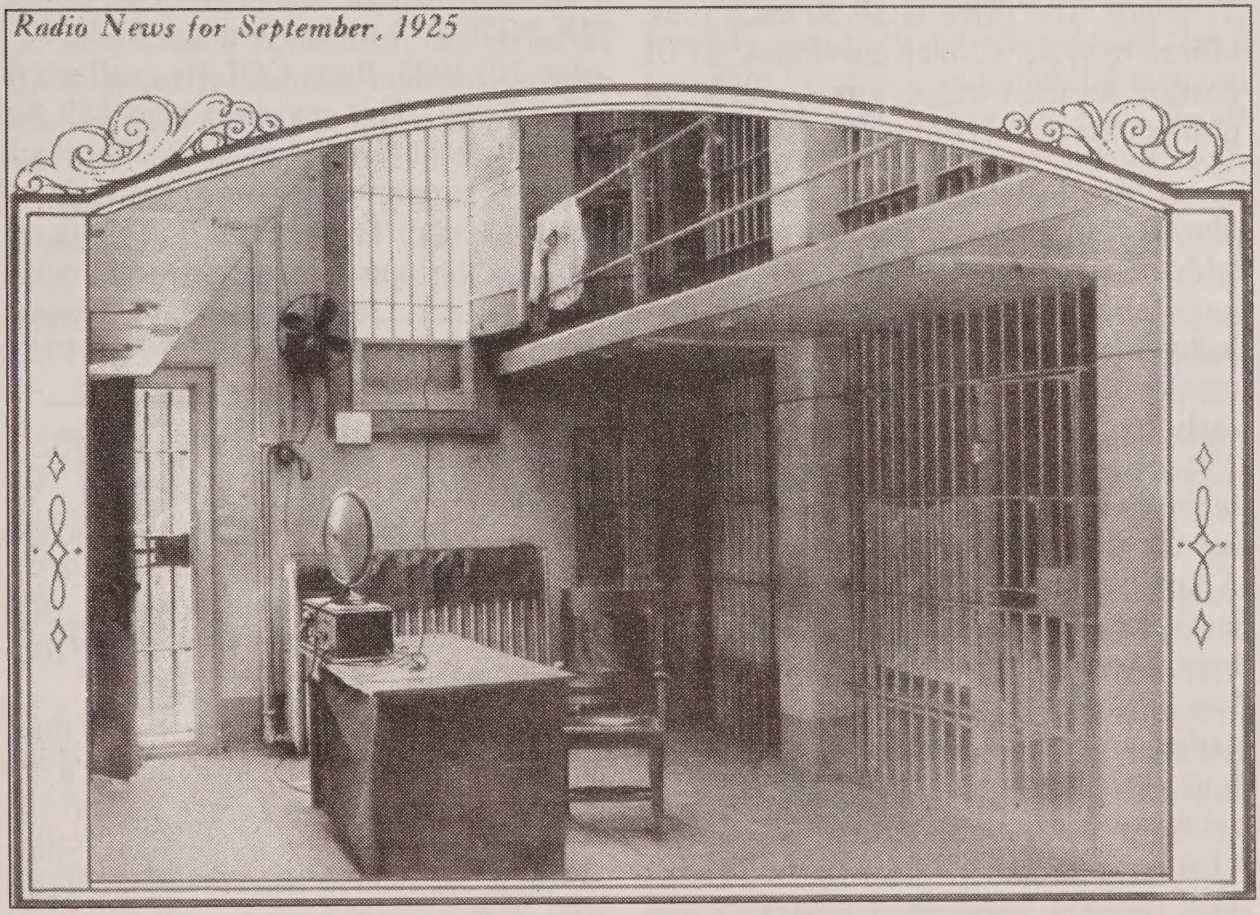
The last wiring operation on this project was the "cross" wrapping of the few wire turns spaced over the antenna length. Five turns of #24 gauge wire on each side of the inner loop wound as shown on **Fig. 3** above completes the electrical design. Note that these windings are short circuited and start and end at the radio chassis ground terminal. The reason for this winding leaves questions in

my mind. I'm not sure if it was designed to form a partial Faraday Shield, or if it lowers the antenna Q and broadens response, or whatever. Perhaps some readers have thoughts on the purpose of this winding.

A few fabricated copper straps enabled mounting. Together with a jumper strap for the external antenna terminals, the cage unit operates best when a jumper is present between the terminals, resulting in a shorting of the inner loop. When an external antenna is used, the jumper is removed and the antenna connected to the inner loop. I checked the inductance of the two antennas using Bob Dennison's (WEHBE) tektronic inductance meter. The original measured 170wh while the new unit was 165wh. A few turns were pushed and both were 170wh.

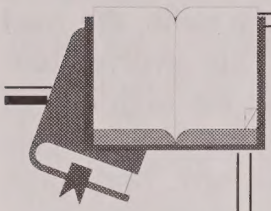
Once attached to the radio, the final adjustment was made. This involved tuning in a weak station at the high end of the band and observing the AVC voltage while adjusting the antenna. Maximum voltage provided optimum tuning.

I hope those of you who have radios of this type needing an antenna will find my experience useful. Those who don't will perhaps develop an appreciation for antenna designs of yesteryear. It may be one reason Zenith advertised that "the quality goes in before the name goes on."



The caption for this photo that ran in the September 1925 issue of Radio News *read: "RADIO IN SING SING DEATH HOUSE. The cells shown are those of the old death house at Sing Sing Prison at Ossining, N.Y. On the warden's desk may be seen a radio receiver for the entertainment of the prisoners in the block." One must assume that the radio receiver was turned on to provide entertainment for the condemned! The photograph was listed as "© Kadel & Herbert."*

REVIEWS: WHAT'S NEW IN PRINT



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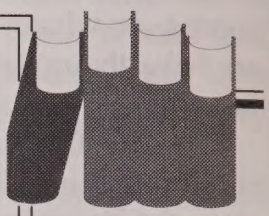


WIRELESS APPARATUS GUIDE 1995 & CRYSTAL RADIO PRICE GUIDE 1995

Copies are available from the author-publisher, Dick Kowalski, 32823, Gloede Drive, Warren, MI 48093. The guides are typewritten, single-spaced, on 8½ -x 11-inch paper, but not illustrated. The *Wireless Apparatus Guide* runs 22 pages; the *Crystal Radio Price Guide* is 31 pages. The price is $9.50 each plus, affixed to 9½- x 12-inch envelopes, $1.01 postage for the wireless guide, and $1.24 postage for the crystal guide.

Kowalski's price guides are quite unlike any previously available guides with which this reviewer is familiar. The *Wireless Apparatus Guide* is not for the collector who wants to price broadcast band receivers; instead it zeros in primarily on early (pre-1920) components. More than 750 prices are listed for 140 brand names representing more than 500 individual model numbers. Brand names include Adams-Morgan, Arnold, Bunnel, DeForest, Electro Importing Co., Chambers, Marconi, Mesco, Vibroplex, Wireless Specialty Co., and Wm. B. Duck, together with some early books and catalogs. Prices quoted are based on such sources as auctions and flea markets, identified as AWA (1, 2 or 3), ARCA, MARC, Tex, etc. For example: Under **General Radio** we find "Type 174 Wavemeter, 1922, Galena Detector, ARCA $145.11." Under **Marconi** one finds "Receiver, V2 Early style, with tubes, AWA 3 $1,400."

The *Price Guide on Crystal Radios* provides a similar price basis. More than 1,000 market prices are listed for over 300 brand names and more than 465 models. Manufacturers include British Thompson Houston, DeForest, Federal, Ken-Rad, Martian, Philmore, and Spencer.

This reviewer was pleased to find the following listing: "India Ivory Co., Clock, VR PG70 (VR means Vintage Radio . . . page 70) 1923. Rare, COL (ie., collectors sale) $900." This reviewer paid $85 for his mint-condition set in 1972. The clock sports a simple crysal set to the right of the clock dial. The world's first clock radio? Another entry states: "Spencer Pocket Radio, Black, Good, Some Rat Chewing, w/Box AWA-3 (ie., meet of 1994) $175."

Radio and Electronics Pioneers — A Patent Bibliography by David W. Kraeuter, 309 pages, 1994, 6½- x 8-inches. Paperback, $57.50; hardback, $69.50. Publisher: UMI Research Astracts, 300 North Zeeb Road, Ann Arbor, MI 48106-1346.

As noted by the publisher, this third and last volume in David Kraeuter's series of patent listings brings to 100 the total number of inventors covered. Since the book consists of lists of patents, identified by inventor, patent number, title and issue date, it is not a book to be read, as one would read history, but it is an exceedingly valuable resource for anyone who wants to get at the root of an early radio or electronics development, or who

wants to know what the inventor himself said of his invention.

This volume lists all the U.S. patents (more than 2,000 of them) of 34 inventors including Georg von Arco (he had 52); Stuart Ballantine, 41; Lloyd Espenschied, 135; Clarence W. Hansell, 303; Irving Langmuir, 69; and Valdemar Poulsen, 20. Members whose libraries include Vol. 5 (1990), Vol. 6 (1991), and Vol. 7 (1992) of *The AWA Review* are already familiar with some of Mr. Kraeuter's listings of famous inventor's patents. None of the listings there included appear in the present book.

One of the more rewarding sections in this reviewer's museum is his file of several hundred important patents relating to early radio. To anyone wishing to develop such a collection this series of books is nearly essential. Patent copies are available for photocopying in large libraries. They can also be ordered from the U.S. Patent and Trademark Office, Box 9, Washington, DC 20231. The price per copy is $3, up from 25¢ when this reviewer started his collection!

The Zenith Trans-Oceanic — The Royalty of Radios by John H. Bryant, AIA, and Harold N. Cones, Ph.D.; 1955; 160 pages; 8½ x 11; soft cover; $24.95 + $2 S&H (Canada, $3 S&H). Schiffer Publishing, Ltd. Orders: The Radio Professors, PO Box 592, Stillwater, OK 74076.

If ever there was a book for collector of Zenith's Trans-Oceanic portables, this must be it. Physically, this is a beautiful book, profusely illustrated in both black and white and color, on fine quality 5 mil. paper (while this reviewer's museum contains not one Trans-Oceanic, it does have an old paper thickness gauge accurate to one 10-thousandths of an inch).

As reported by the authors, the first of the family, the Clipper, was a 1942 model which went into limited production in October 1941. The first transistorized model, The Royal 1000, was produced in late 1957. In addition to the excellent photographs of the radios themselves, the book contains many full-page reproductions of Zenith ads as they appeared in publications of the time. Regrettably, the names and dates of these publication have been omitted.

The authors, both AWA members and college professors, appear well positioned to deal with their subject. The text contains numerous informative footnotes that are assembled by chapter in a four-page section entitles "Endnotes." A scanning of the acknowledgments and the endnotes sections indicates that the authors did substantial library research. However, Zenith's archives as well as certain of its past and present employees were clearly major sources of information. The authors identify nine such individuals who "gave valuable assistance in gathering material and information." Thus this book is not lacking in information from Zenith itself.

As noted on the book's cover, the authors "present the fascinating story of the development and use of the Trans-Oceanic throughout the forty-year life" along with "a wealth of never before published photographs, documents and information." Some insight as to the scope of content of this book can be gained from the following recitation of chapter titles where, for brevity, "Trans-Oceanic" appears as "T-O": "The Portable Radio," "The Commander and the T-O," "The T-O in War and Peace," "Design and Styling," "The End of the T-O," "Lineage of the T-O," "T-O Portraits," "T-O Accessories," "Collecting T-Os," "Physical and Electronic Restoration of Tube Models," ". . . Restoration of Solid State Models," and "Parts Commonality." Finally, there are appendices listing restorer's tools and materials, a list of material suppliers, radio clubs, and a price list.

This reviewer is grateful for the opportunity to examine this fine book. It will not be easy to return it to the AWA's library.

A RESURRECTED TRIRDYN

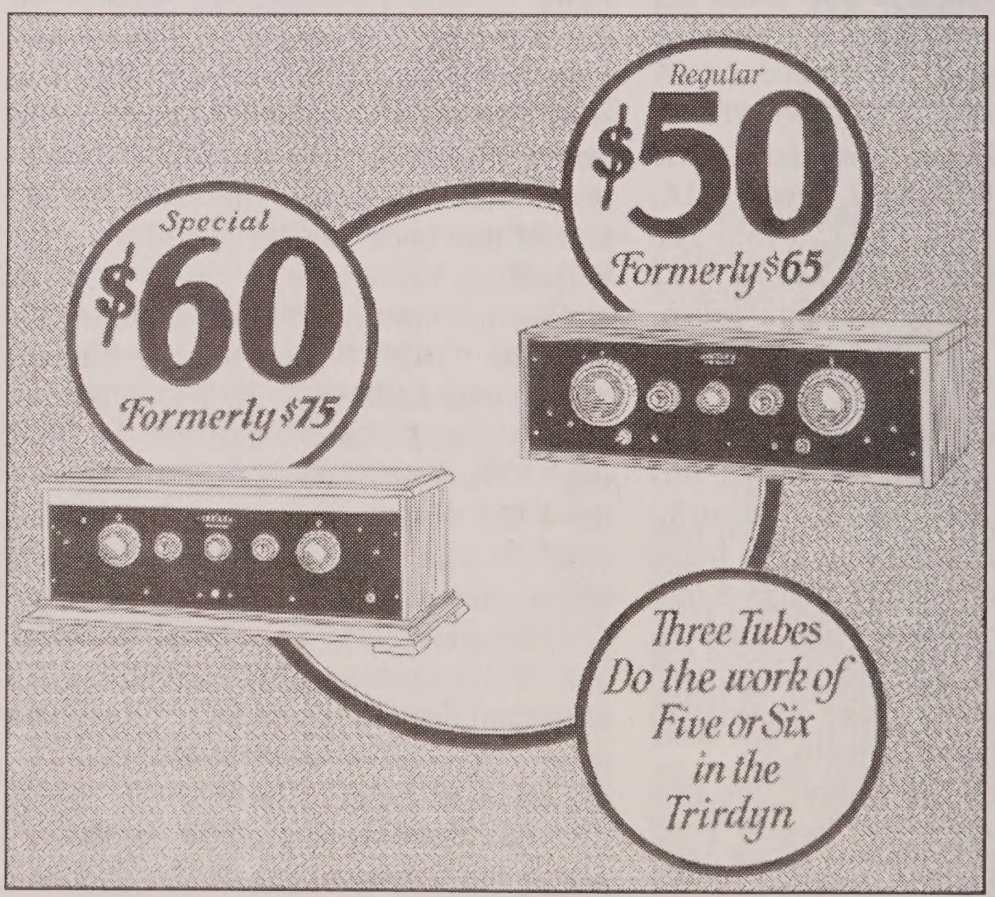
By William E. Denk

**"'Tis distance lends enchantment to the view,
and robes the mountain in its azure hue."**

When poet Thomas Campbell spoke of distance it was in terms of space, but think of these lines in terms of time and you may understand this writer's fascination with the Crosley Trirdyn of 1925. That is 70 years ago! I think back to when, as a high school freshman, I delivered one of these sets to a citizen in our little midwestern town, hooked it up and demonstrated its operation. I recall it as one hot little set.

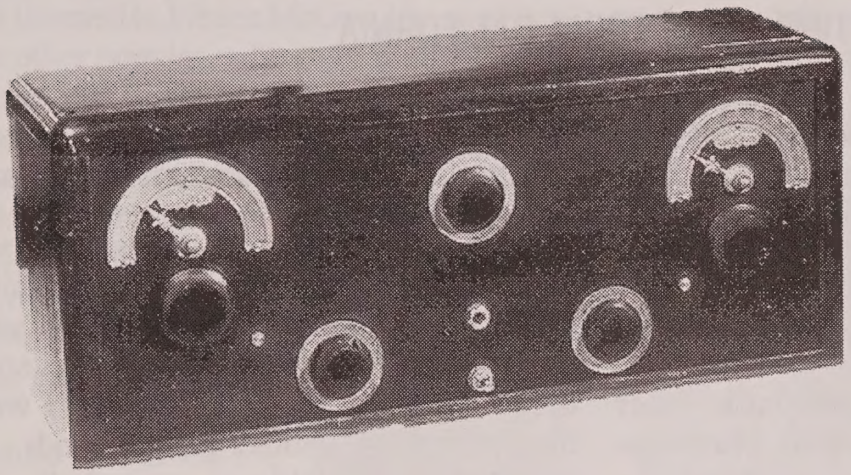
Then in 1971, as a member of AWA, I acquired a Super Trirdyn Regular at a price of $40. It sold for $50 in 1925. Though the set was in mint condition, I never bothered to hook it up. I just enjoyed its presence in my collection.

However, not long ago my curiosity got the better of me. If operable, how would it work in today's world? Before connecting it to a power supply, I made the usual tests with an ohmmeter, checking each circuit from binding post to the appropriate tube socket contact. For example, the C-post to the grid contact of tube socket No. 1 gave me a continuity test of the antenna secondary in series with the first audio transformer secondary. The ohmmeter read 5,000 ohms which I concluded was reasonable for the audio transformer secondary. The included antenna transformer secondary resistance would be negligible on that scale. Remember, the Trirdyn is a reflex set in which the RF amplifier doubled as the first audio amplifier.



A portion of a 1925 Crosley Trirdyn ad.

A similar circuit check was made from the A+B- binding post to the



William Denk's resurrected T rirdyn.

grid contact of the detector tube socket (with the filament switch closed). It gave a reading of 3 megohms, suggesting that the grid leak was OK, as was also the RF transformer secondary.

This particular Trirdyn, unlike earlier versions, had a separate antenna primary which I tested with ohmmeter probes contacting the antenna and ground binding posts. Interestingly, in this Trirdyn, the coupling between the antenna primary and secondary was adjustable by way of a push and pull knob. It was the sort that Crosley used for regeneration control in such sets as the Crosley Model 52. In the Trirdyn, this control is located inside the cabinet, and probably was little used after initial adjustment.

All of these battery-terminal-to-socket-contact tests produced readings that led me to believe that all was well circuit-wise. Tube tests indicated that the tubes that came with the set were good enough for my purposes.

Now I was ready to connect this old-timer to a power supply, antenna, ground, and loudspeaker. Since my antenna for antique radios had blown down in a storm some years ago, I decided (hoping that Powell Crosley would not be offended) to use my "active antenna" which, with its 42-inch monopole, its transistor circuit, and a 9-volt battery, would fool the Trirdyn into thinking it was connected to a real, 100-foot-long, elevated aerial wire.

When all was ready, I closed the filament switch and turned up the two rheostats. With the tickler adjustment I could hear the set going into and out of oscillation, but not much else until I tuned to a local 50 kw station. But even there the set was disappointingly very dead. After a review of what I had done, and the rocking of tubes in their sockets, I turned the set off and rethought the whole operation, but nothing of value developed.

It subsequently occurred to me to wonder how long that 9-volt battery had been in the base of the active antenna. My voltmeter gave me a reading of 3 volts. A new 9-volt battery was installed and the set turned on again. WOW! The problem now was to reduce receiver sensitivity on the 50 kw local. That was done with minimum antenna coupling, minimum regeneration, and a drastic reduction in detector filament current. Now the dials were alive with stations, some sufficiently distant to exhibit severe fading.

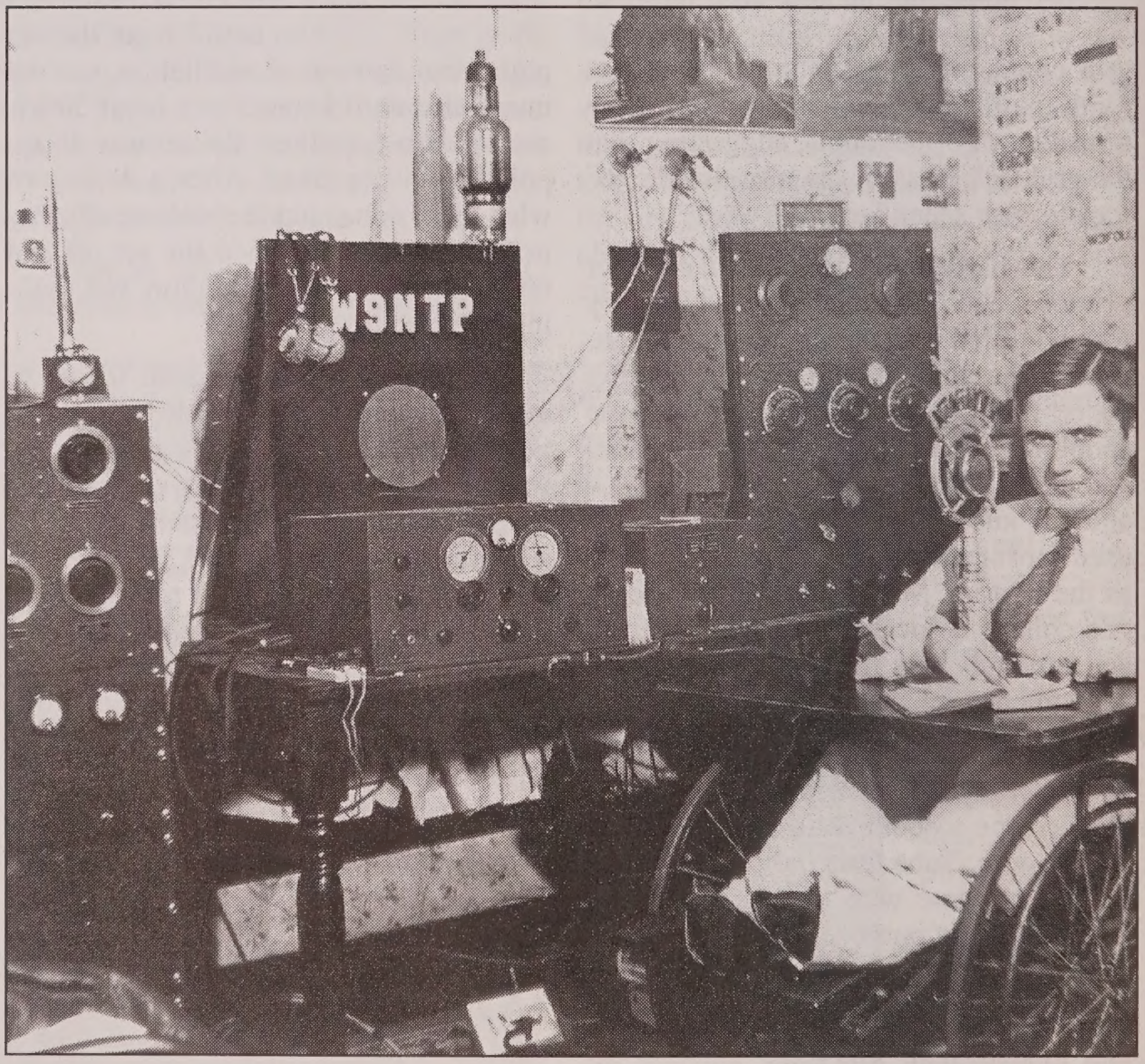
Think of it! In that 70 year old Reflex not one component had gone sour! The only problem encountered was in my use of a modern active antenna and its failed 9-volt battery. Perhaps it served me right for providing that old-timer with a fake antenna and ground.

TWO HAMS FROM CALIFORNIA

By Joseph W. Dreher, W2TKG
1 MacArthur Road, Baldwinsville, NY 13027

It had become a second home. Every spare moment of my early teens had been spent with my good friend and mentor, Bill Brentlinger, W9NTP. Bill, and his younger brother Jack, later W9ZBR, suffered from a form of muscular deficiency. He had been confined to a wheelchair since he was 15 — a "chair warmer" in his terms, but one bent on being active in every possible way. While he could sit up, throw a toggle switch, and hold a pencil to write laboriously, everything else had to be done for him. I was there to help — another pair of hands.

Bill's real world was very small . . . the shack, the front porch in the summer,



Bill Brentlinger, W9NTP, in his shack in the mid-'30s. On the table is an RME-9D receiver, a speech amplifier for the Turner Type G mike, and the "big" rig with a pair of '46s in the final modulated by the same. The rig at left (line-up unknown) had just been completed by Ted Hunter, W9NBZ, W9NTI and W0NTI, a professor of physics at the Rose-Hulman Institute of Technology, the the Rose Polytechnic Institute.

and the family dining room where he read or listened to Fibber McGee, Vic and Sade, or other popular radio entertainment of the time. Only on rare occasions did his mother and I push him and his brother to a movie. There were visitors, but the 160 meter phone provided his most frequent contact with the outside world.

The shack, while not always a model of orderliness, was arranged for the convenience of two handicapped brothers . . . their hobby room. There were no chairs as clear space was needed for two wheelchairs; only two cots were there to sit on. QSL cards covered part of one wall. A wooden airplane propeller — an older brother had flown — was anchored above the room's only window. Two prints of Donald Duck, sent by a family friend who had gone to work for Disney, filled a narrow wall. A blown 204A clung to the top of the RME-9D speaker baffle. The "big" rig, a '47 xtal, '46 buffer, and a pair of '46s in the final modulated by the same, filled out the operating table. The rig was a monument to Ted Hunter, W9NBZ, later W0NTI, who for several years was Bill's biggest pair of hands. The rig was set up for 160 meter phone only.

Famed radio and theatrical comedians Lum and Abner.

On this particular Saturday afternoon, Feb. 1, 1936, Bill, Jack, and I were in the shack. I was doing something for Bill that involved a soldering iron. I suspect that I was working on a Hartley oscillator for him to use on 80 meters. Despite his handicap Bill wanted, in the worst way, to try his hand at CW as part of his ongoing ham activity.

Whatever the nature of the activity and status of it, the comparative calm of that afternoon was shattered when Bill's dad announced loudly, as he entered the room, that he had brought two hams from California for a visit. I suspect that there was a mild bit of irony in his way of getting our attention. Bill's dad knew quite well that despite many, many pre-dawn attempts Bill had not, up to that time, worked W6 (more than California in those days) with his 46 watts input and 135-foot wire with counterpoise. Now, here was some real DX walking right into the room.

I do not recall exactly how, if any, introductions were made. I do know that no specific calls were mentioned and no names were used that aroused suspicion. Since the visitors were there to see Bill, I continued to work in my little corner next to the "big" rig.

The visitors took seats on Bill's cot and began talking between themselves — no interchange with Bill or others in the room. They rushed to keep the words coming and allowed no gaps. Although I was far, far from being skilled in the ham game, I knew very quickly that something wasn't quite right. It just wasn't hams talking ham talk. Then, without warning, their conversation came to an abrupt end. Whatever ham lingo they had apparently accumulated had been exhausted. To everyone's surprise, these two "W6s" suddenly became Lum and Abner — great names in radio in those days — who were

Continued on page 24

— TWO HAMS

Continued from page 23

appearing on-stage at one of the local theaters. I clearly recall that I hastily set aside the soldering iron and moved to where the action was!

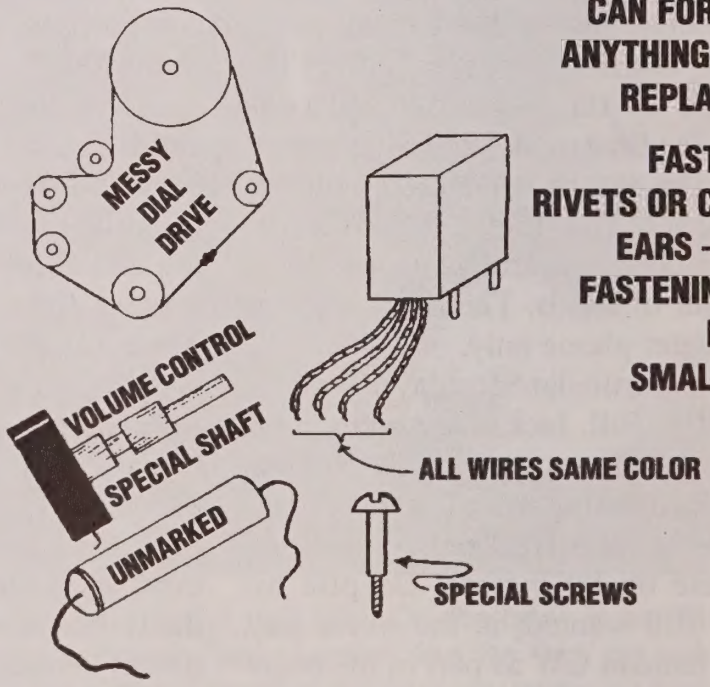
Of course the deception would not have worked today if they were correspondingly famous as TV personalities. In this particular instance their normal voices did not betray those of their stage characters.

Thanks to a theater mnager who was aware of the "chair warmers," the between-stage-appearance was arranged. In a day when little was done for the handicapped, these two men, Chester Lauck and Norris Goff — Lum Edwards and Abner Peabody, respectively, owners of the Jot'em Down Store in Pine Ridge, AR, — brought a few moments of hilarity as they later went through their routine before this private audience. It was a rare treat for these young men.who seldom left their home. Bill's column, "Amateur Radio in the Wabash Valley," appearing the next day in the *Terre Haute Tribune* said the visitors "were very much interested in amateur radio; in fact they listened to us amateurs when they have the time and expressed their desire at owning an amteur station."

I've seen nothing to suggest that either of these two gentlemen became hams. Their careers as rustic home-spun radio characters spanned 22 years. Their last broadcast occurred May 15, 1953.[1] Goff (Abner) died at the age of 72. Lauck (Lum) died early in 1980 at 78. He had been an executive with Continental Oil for 12 years following his retirement from radio.[2] Bill was not as fortunate. He became an SK the following Nov 5 at 21. It was, as it turns out, a well timed visit.

1. *Tune in Yesterday, The Ultimate Encyclopedia of Old-Time Radio,* 1925-1976, John Dunning.
2. *The Sentinel-Record,* Little Rock, Feb. 22, 1980.

HOW TO BE DISLIKED BY REPAIRERS



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BUILDING A TUBE-TYPE CCTV CAMERA

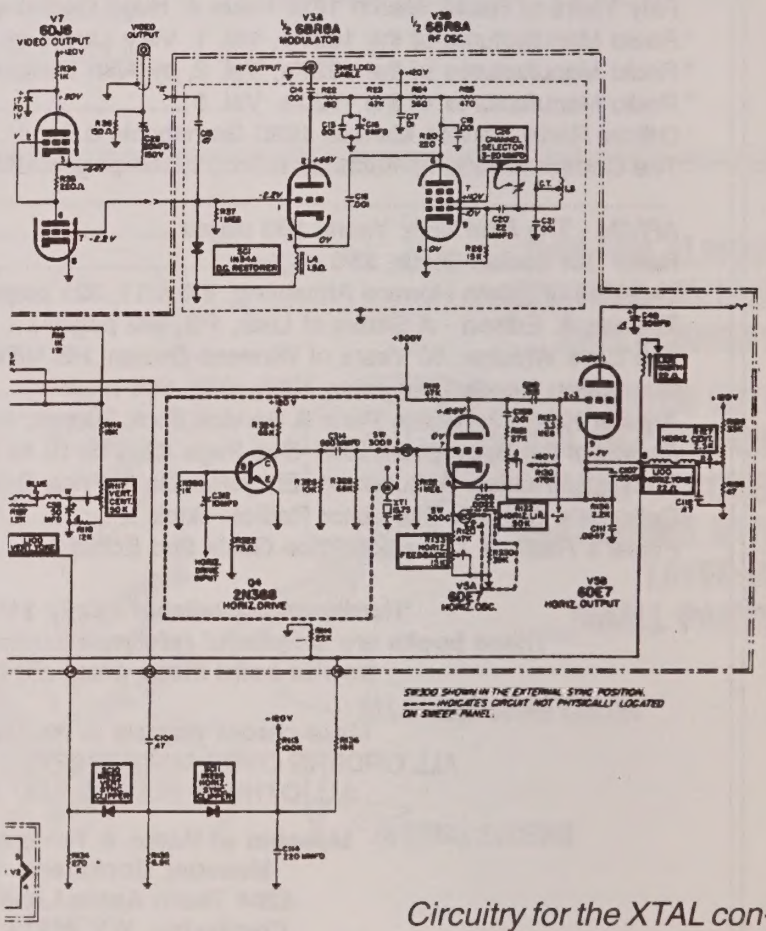
Building a closed circuit black and white television camera began to interest me in the late 1960s. So, I studied various U.S. and British magazines and other publications for yoke-winding specifications and plans from which I would decide the best way to go about the project.

While pouring over some articles I found information on a tube-type camera (by ATV Research in Dakota City, NE) where the builder assembled his own yoke from pre-wound coils and built a five-tube camera using a lens mount, vidicon socket and power transformer supplied by ATV.

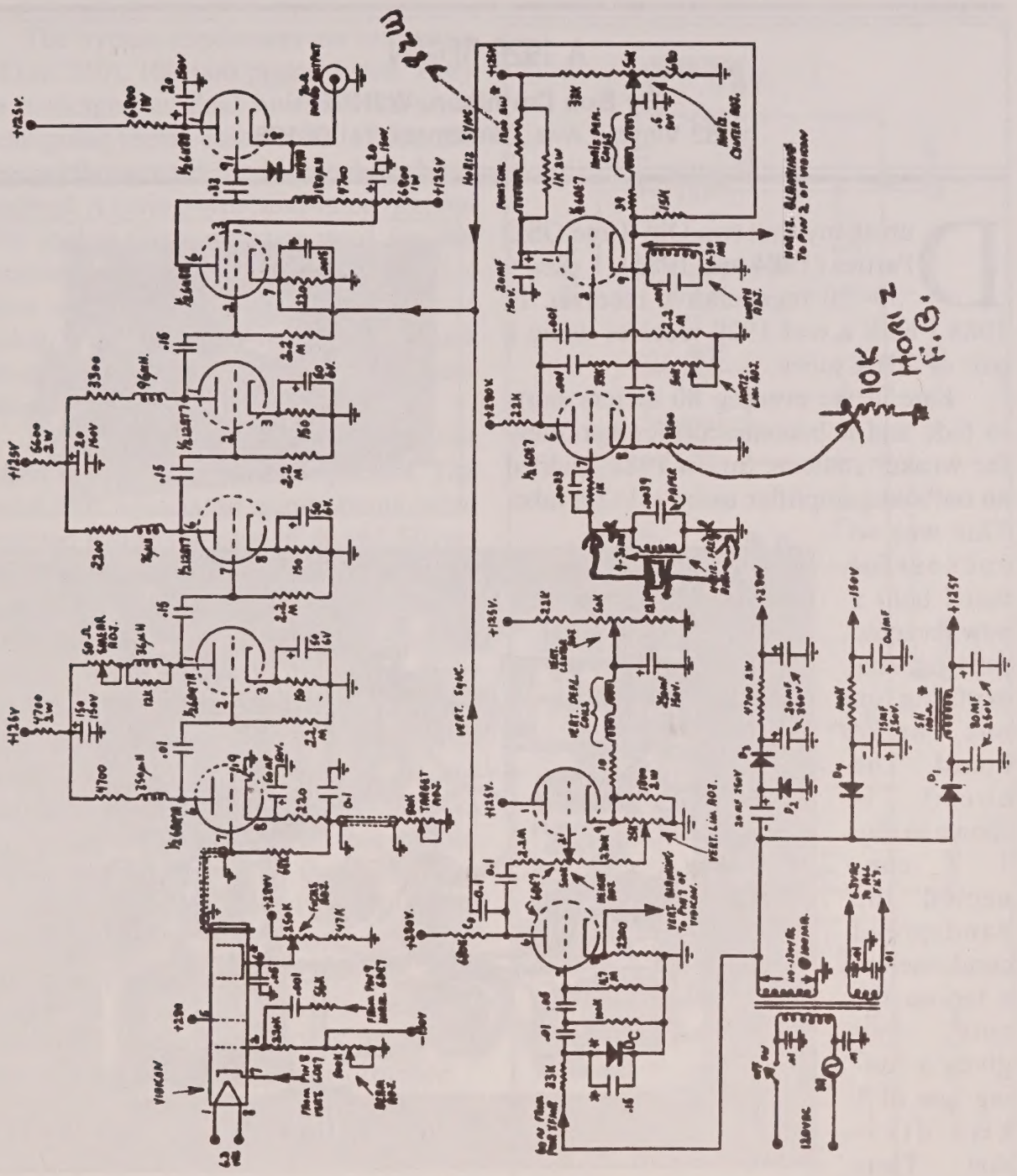
Examining the schematic, one sees a very basic hook-up featuring a 1-inch vidicon tube 6198, 7735, etc., 6BQ7, 12AT7, 6U8 video amplifier, 6DE7 horizontal and vertical oscillators and amplifiers. I ordered the parts and by using some junk WECO parts, built the camera. However, my assembly of the yoke missed something and I ended up with a very crunched, nonlinear picture.

So, I ordered a preassembled yoke, phased the connections and ended up with a very good camera using a homemade modulator-oscillator working into a TV set. My only complaint was the instability of the LC horizontal oscillator which I replaced with a 15.750 kc. xtal and circuit copied from a Sylvania camera. As a result I had a very nice arrangement.

The only temporary drawback was BCI from the local AM radio station. This was solved by installing MU metal inside the yoke and running a lead to the chassis' ground.



Circuitry for the XTAL control horizontal oscillator.



Complete schematic diagram of the ATV Research vidcon TV camera.

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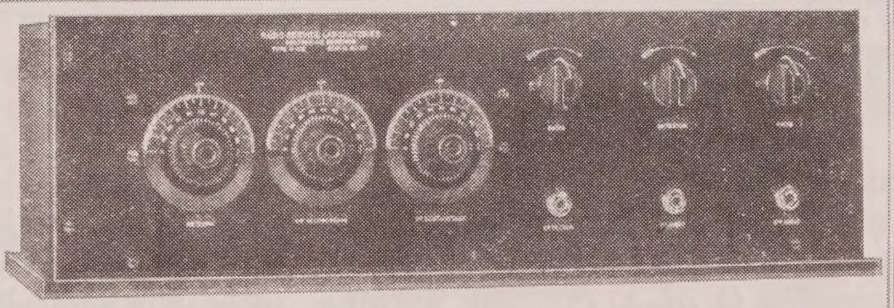

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A 1929 REGEN

By Bob Dennison, W2HBE
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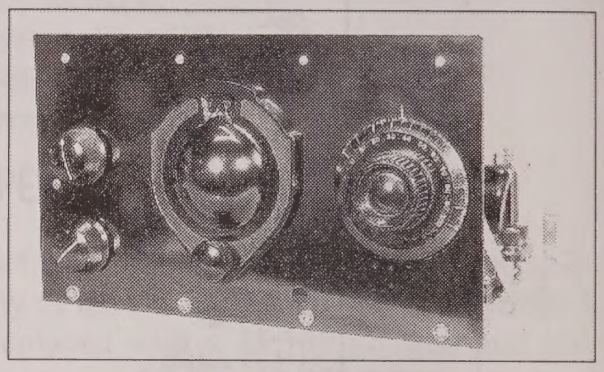
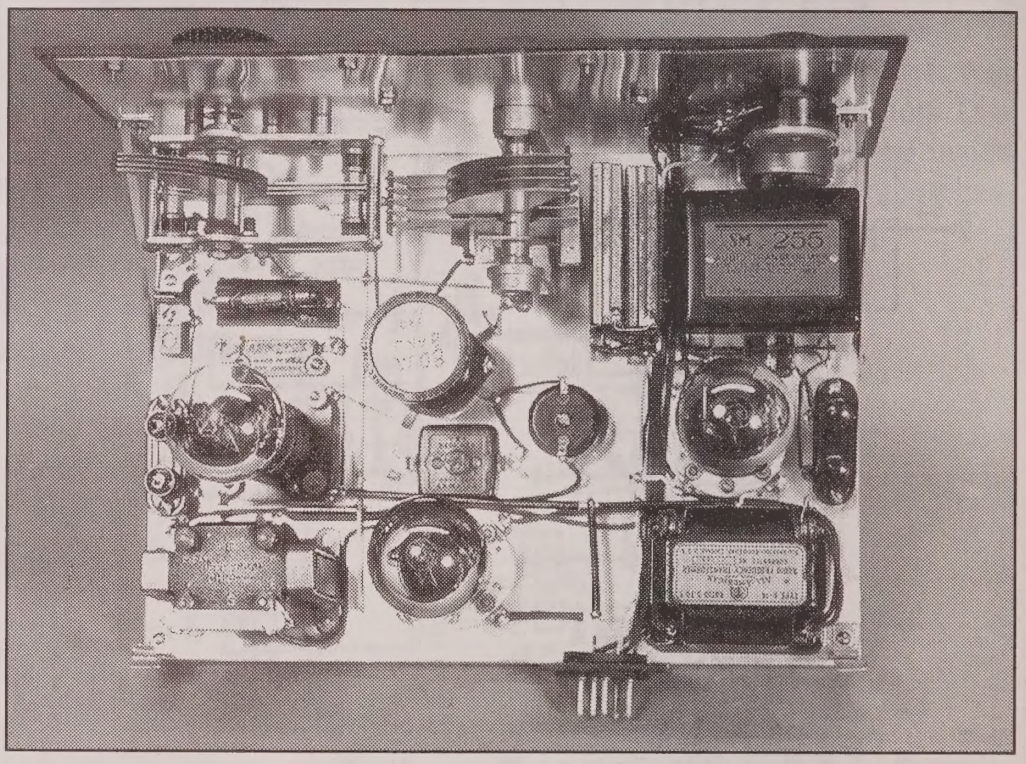


During my first two Old-Time QSO Parties (1984 and 1985), 1 used a '30-'30 regenerative receiver. In 1986 I built a real 1929 receiver using a pair of 201A tubes.

Late in the evening 80 meters starts to fade and it becomes difficult to copy the weaker stations. So, in 1988 I added an outboard amplifier using a 112A tube. This was so successful that I built a new receiver, putting everything on one bread board. The circuit is shown in Fig. 1. I connected the bandspread condenser to a tap on the coil that gives a tuning rate of 1 kHz/division. Thus when the dial is set to 85 I know that I'm tuned to 3585 kHz, etc. This, of course, does not hold for the entire span of the dial, but it works quite well over the 20 kHz in which the QSO contest takes place.

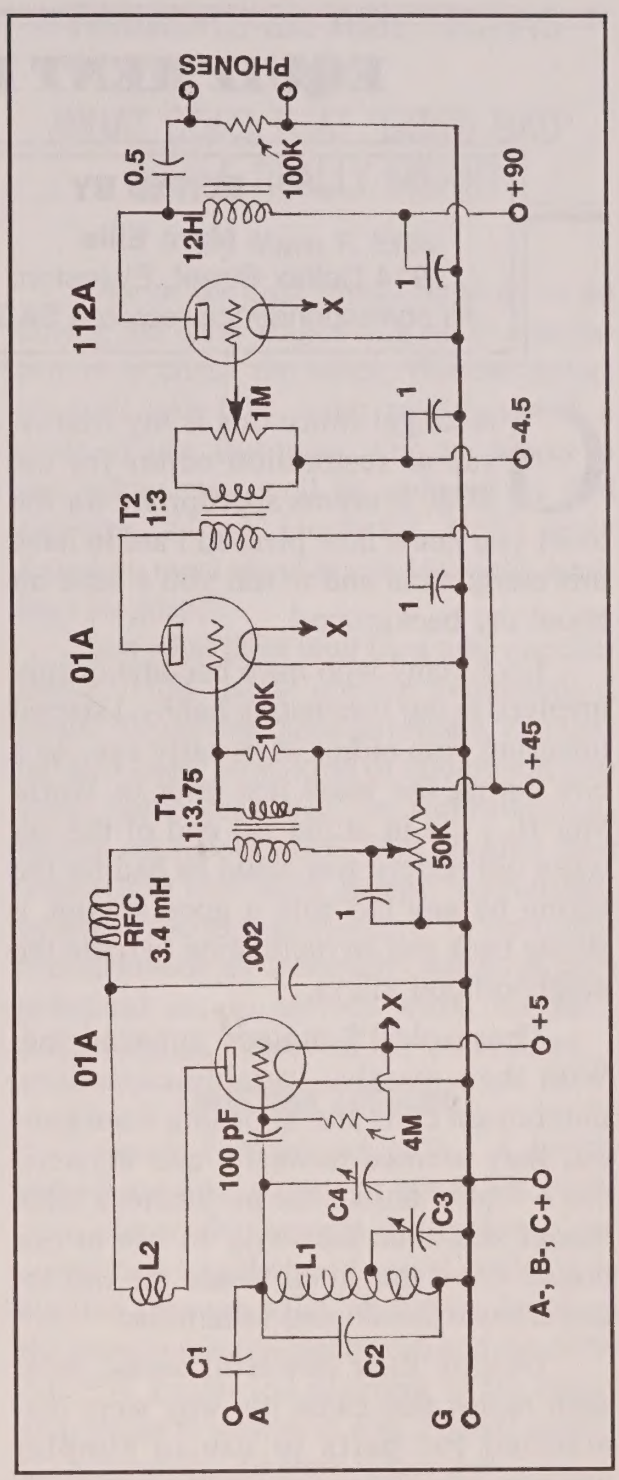


The bandset tuning condenser is a Karas measuring 180 pf. Its Q was measured as 2240 at 3.6 MHz. For comparison, a "modern" Hammarlund (MC-100) showed a Q of 2775. The antique Hammarlund used for bandspread (C3) had a Q of only 763. This is quite poor, but since it is tapped far down on the coil its effective Q is much higher — estimated to be about 5,000. To make the bandset condenser (C4) adjustment less critical, I put a 100 pf mica condenser inside the coil form. This is shown as C2. The antenna coupling condenser (Cl) is made of two small brass angles mounted on a Bakelite block. The spacing (about .06 inches) is adjusted to give about 1 pf capacitance.

The bypass condensers are miniature 1pf (alt 230), 100-volt pigtail types. They are packaged as dual units in old-style rectangular metal cases from which the original flat-wound condensers have been removed. A spring-type, anti-micro phonic tube socket (Benjamin) is used for the detector tube. It pays to test several O1A tubes and put the best in the detector socket. The other two tube sockets are General Radio, white porcelain, surface-mounts.

Impedance coupling is used at the output to keep DC out of the phones. The choke and associated components were mounted inside the case of an old Silver-Marshall Model 255 AFT. Regenerative receivers must be well shielded to avoid hand-capacity effects and pick-up of local line interference. Aluminum sheet (.012 thick) covers the top surface of the bread board and the rear of the Bakelite panel. The top and rear of the set are shielded by an L-shaped shield (.05 thick) that has a one-quarter-inch lip that catches against the outside top of the panel. The bottom rear end fits into two grounding receptacles made from brass angles and pieces of spring brass.

In the 1993 Old Timer's contest I worked 32 stations using this receiver. I was very pleased with its performance.



The schematic for Bob Dennison's 1929 regen.

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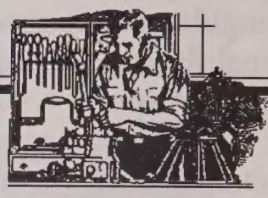


Greetings! Since this is my first issue as restoration editor for the *OTB,* It seems appropriate for me to let you know how pleased I am to have this assignment and to tell you a little bit about my background.

Like many who have become deeply involved in our fascinating hobby, I started tinkering with radios at an early age. As a boy during the years just prior to World War II, I got in at the tail end of the era when old battery sets could be had for the taking by any lad with a good wagon, a strong back and an inclination to roam the neighborhood alleys.

Those old "3-dialers" amazed me. With their massive variable capacitors, flamboyant coils and imposing front panels, they seemed powerful and mysterious — quite unlike the perfunctory table model sets then currently in use at our house. Even the smell inside the old receivers was exotic and unfamiliar.

Despite their powerful auras, most such radios that came my way were dismantled for parts to use in simpler projects. My allowance could never cover the purchase of all the batteries called for by that multi-lead power cable, or intimidating row of binding posts, found on most sets. And of course, back then, only a few farsighted souls were preserving these sets as antiques.

My interests eventually turned to ham radio, and I got my license while in high-school — just in time for the exciting action on 10 meters during those peak sunspot years around 1947-48. Ham radio was put aside when I entered college, however, not to be picked up again until I sat for a new license exam about 10 years ago. Current call is N9EWJ, though I'm not very active even now.

Antique radios came back into my life much sooner, however. During the early 1960s, early in my career as a writer and editor, I spent some time on the staff of the old *Popular Electronics* magazine. While working on *P.E.,* I handled a few articles dealing with antique radios and found myself very much drawn to the subject. It wasn't long before I began collecting and restoring myself.

I spent only about a year on the *P.E.* staff, going on to a career split about half and half between classroom film producing and developing training programs for industry. But the interest in antique radio remained with me. Over the years I stayed in touch with my old boss at *P.E.,* occasionally contributing antique radio articles to whichever publication he happened to be associated with. This eventually led to an invitation to start an antique radio column for *Hands-On Electronics* magazine (now the reborn *Popular Electronics*) and now, more than eight years later, I still have the pleasure of contributing that monthly column.

A little over a year ago I began publishing *The Radio Collector,* a newsletter-style periodical for newcomers to our hobby. *The Radio collector* has also managed to attract several knowledgeable vet-

eran collectors, who enjoy sharing their knowledge with others.

I've become acquainted with many of the AWA officers and *OTB* staffers during these antique radio publishing activities, and am looking forward to getting to know them (and you, the *OTB* readers) better in the months to come. I'm particularly interested in finding out more about the kinds of restoration topics you'd like to see covered in the *OTB* and in encouraging knowledgeable readers to contribute articles on restoration topics.

During periods when no reader contributions are forthcoming, I've committed to providing a short column myself. But I have to warn you, about something! Unlike many of the veteran AWA members and *OTB* contributors, I don't have a professional background in electronics. Nor do I have a craftsman's facility for such things as engraving new dials or fabricating replacement drive pulleys. So I suspect that my personal adventures in antique radio wouldn't be of compelling interest to the hard-core restorers in the group.

Let me assure you, though, I love reading (and writing) about how the difficult problems are solved, and find nothing as interesting as a good restoration war story. So if you have something to say in this area, please submit it! Or if you'd just like to send me some suggestions on how to slant thiscolumn, those would also be gratefully received.

To submit ideas and suggestions and articles for *OTB,* or to request an information sheet on The Radio Collector, please contact me at P.O. Box 1306, Evanston, IL 60204-1306. Phone (708) 869-5016.

— Marc F. Ellis

THOUGHTS ON TUBE TESTING or WHAT DOES THAT "GOOD-BAD" SCALE REALLY MEAN?

By Marc F. Ellis

One of the first things most of us do during the early stages of a radio restoration is to check the tubes. Veteran restorers will take tube tester readings with a grain of salt. But those who are newer to the hobby may well be seduced by that definite "Good, Doubtful, Bad" scale found on most checkers and take the readings as gospel.

Just what does your own tube checker check? How useful are the indications it gives? To answer those questions, you first have to know what kind of equipment you have. Some years ago, the electronics industry set up standards that divided tube testers into four basic groups. Instruments in one of the groups (Group IV) are rarely found outside the laboratory and have little practical use in service work, but let's make a quick survey of the other three.

EMISSION TESTERS

Group I is defined as ". . .a device incorporating a circuit in which all available electrodes except the cathode are connected together and an AC voltage is applied through a DC indicator between the interconnected electrodes and the cathode." A simplified diagram of an emission tester is shown in **Fig. 1** (next page). It's a symbolic diagram rather than a drawing of any specific instrument.

As you can see, the tube under test is connected as a diode and used as a rectifier to produce a DC current that is measured by a milliammeter. Variable resistor R provides a means to control the plate current to protect tubes that can safely pass only small amounts. The reading on the meter is an indication of the size of the electron stream being produced by the

Continued on page 32

Continued from page 31

tube's cathode and, when properly calibrated, a guide to the useful life remaining in the tube.

Emission tube testers are quick and easy to set up and use. The old drug-store and parts-counter testers are good examples. The do-it-yourself repair person or counter clerk could operate these instruments with little difficulty. Most of the low-end testers made for service-bench use were also emission units.

The problem with such testers is that the emission of a tube is often only loosely related to its ability to perform as an amplifier or oscillator in the circuit where it is being used. Their best function is probably to identify tubes that are clearly useless because of nonexistent (or practically nonexistent) emission.

Since emission testers were often produced as low-end units, many are apt to have design flaws. If you own one, check its circuit diagram to make sure that there is some method of regulating plate current to suit the particular tube being tested. Quite a few of these units apply a standard plate voltage to all tubes, keeping the meter on scale only by means of an adjustable shunt across it. Pulling excess current through a tube can result in gassing it up or warping tube elements.

You might also want to plug a tube with a heavy heater drain into the tester and check the heater voltage being applied. Cheaply built filament transform-

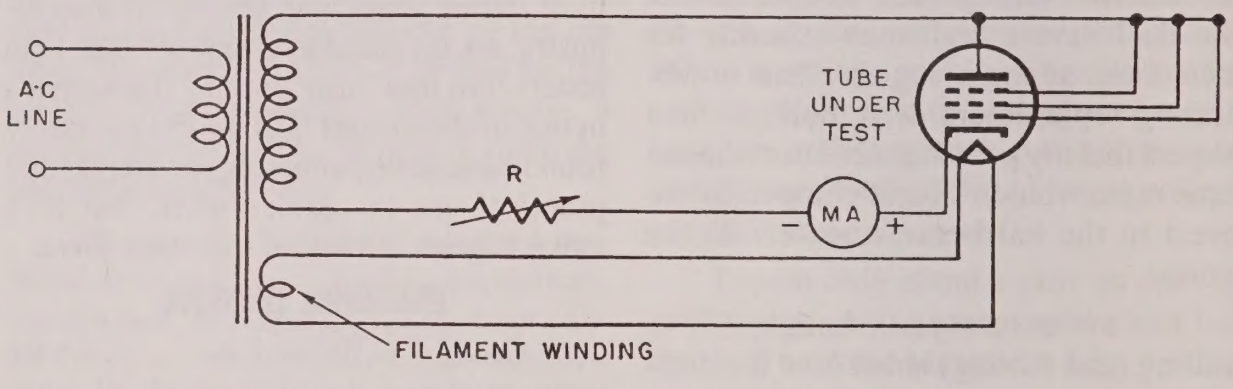
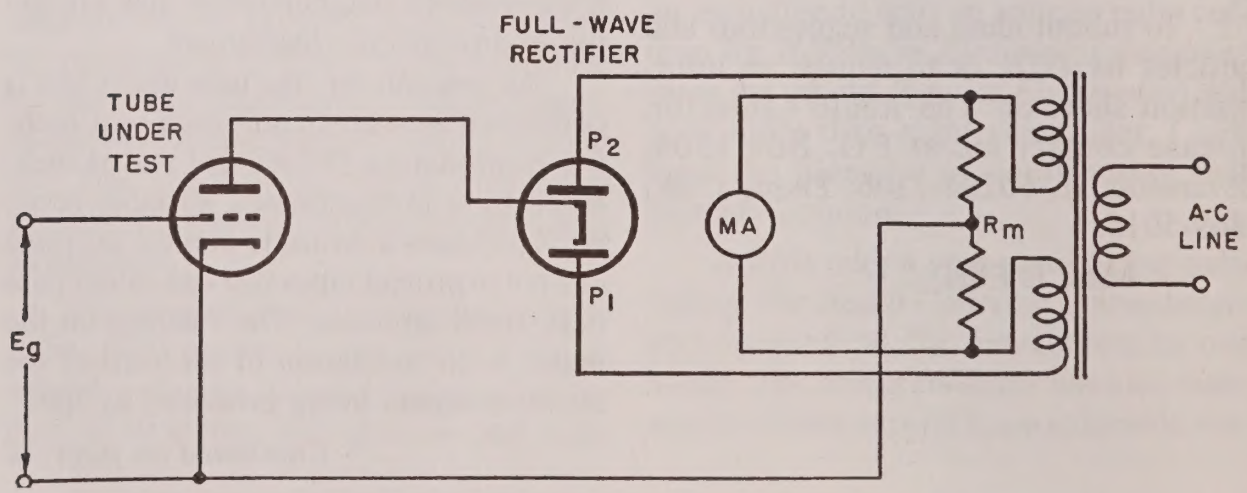


***Fig. 1 (above)** — Simplified emission tester schematic. Tube under test is conected as a diode. Resulting self-rectified plate current is read on a d.c. milliammeter.*

***Fig. 2 (below)** — Simplified dynamic transconductance tester. Proper bias, plus small AC signal is applied at Eg to tube under test. Meter reading is proportional to amplified signal, and is unaffected by tube's plate current.*



ers may have poor regulation and not supply adequate voltage under load.

SIMPLE AMPLIFICATION TESTERS

Group II instruments are defined as ". . .a device incorporating a circuit in which separate AC voltages are applied between grid and cathode and between other elements, individually or collectively, and cathode. A DC indicator is connected in series with the plate." These instruments are set up very much like emission testers; the tube under test rectifies the applied AC plate voltage, producing a DC current that is measured by a milliammeter. However, the reading on the plate circuit milliammeter now provides some indication of the tube's ability to amplify an AC test signal applied to the grid.

The basic problem with Group II testers is that its readings are influenced by the plate current drawn by the tube. For example, a tube with a higher plate current might test better than a tube with a lower one — even though the latter tube might be a much better amplifier.

Simple testers of this type also tend to apply a standard test signal to the grid, regardless of tube type. Some tubes may be overdriven by this signal, thereby exhibiting reduced plate current and showing an abnormally low quality reading.

TRANSCONDUCTANCE TESTERS

With the Group III instrument, we finally have a tester that will give a good indication of a tube's gain, or amplifying capability. This instrument is defined as ". . .a device incorporating a circuit wherein separate grid signals and bias voltages are applied with the indicator responsive only to the grid-signal-produced component of the output current." A simplified schematic of a Group III instrument is shown as **Fig. 2** (preceeding page). A DC bias that is correct for the tube under test is applied across "Eg." Also applied there is a small AC voltage to be used as an amplification test.

The tube being tested is connected as a load across the full-wave rectifier circuit supplied by the transformer at right. Connected across the transformer secondary as shown, the DC milliammeter will be insensitive to the tube's resting (no test signal applied at Eg) plate current. However, when the test signal is applied at the grid, it will deflect proportionally to the amount of amplification achieved.

Instruments of this type may be labeled *Dynamic Mutual Conductance* or *Dynamic Transconductance* testers. They are certainly the most desirable of the designs normally available to the antique radio hobbyist. However, tube authority Robert B. Tomer (see references at conclusion of this article) took a dim view of even this type of checker: ". . .but having granted its general usefulness as a measure of the gain characteristics of a tube, we then have to ask the logical question, 'In how many typical applications are tubes used as Class-A amplifiers of sinusoidal signals?' The answer is something less then 10 percent, which means that even the finest instrument available for reading transconductance is reading a characteristic which can be correlated with only about one out of every 10 applications. . ."

THE BOTTOM LINE

For me, the most important quality factor about a tube is whether or not it will function properly in the radio I plug it into. I do test all tubes early on in every one of my restoration projects, but only to uncover serious shortcomings in transconductance — or problems with shorts or gas. Once I see that a tube has half a chance of functioning and is not likely fry other components in the set, I'll base my final judgement on how well it performs in the circuit. Using an ordinary service checker to "select" the best tube

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— EQUIPMENT RESTORATION

Continued from page 33

from a group of good ones is definitely an empty exercise.

Care to express your own thoughts on this subject? I'd be delighted to hear from you.

References:

- *Getting the Most Out of Vacuum Tubes,* by Robert B. Tomer. Published by Howard W. Sams & Co., Indianapolis, IN. First Edition, 1960
- *Theory and Use of Electronic Test Equipment,* Department of the Army Technical Manual TM 11-664; Department of the Air force Technical Manual TO 16-1-256. February 1952.
- *The Radiotron Designers Handbook* edited by F. Langford Smith. Published by The Wireless Press, Sydney, Australia and RCA Manufacturing Co., Harrison, NJ. Third Edition, November 1941.

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SILVER MARSHALL HEAD-SCRATCHER

By Ross Smith

From the Newsletter for Northern Indiana members of IHRS

A 1933 Silver Marshall Model 782 came in with an unconventional circuit last month that would stop the best of us! Well, you are never too old to learn, so this presented an opportunity.

In trying to put things together, I noticed that there were six wires going to the speaker, five on a 5-prong plug and one ground wire that tied to a screw on the chassis. The output transformer was mounted on the speaker frame and the two plate connections from push-pull 45's plus the B+ in and B+ out were on the speaker cable. This made only four connections, so where were the other two?

Further inspection revealed four wires coming out of the field coil winding, and the second coil was not a hum-bucking winding to the voice coil. Tracing the four wires revealed *two* field windings, each measuring 700 ohms.

After spending considerable time in thought and making additional continuity tests, it was revealed that the first field winding served as a filter choke and the second winding served as a bias resistor in order to supply the negative 50 volt bias for the push-pull output tubes! The schematic did not show the speaker or the connections.

Apparently, one choke coil winding was not enough to supply the magnetic force required, so the other winding carrying current from the output tube cathodes to ground to ground was required to bolster the electromagnetic force. How do you replace an odd-ball speaker with two equal field windings? Fortunately, the speaker did work ok with minor cone repairs.

BUSH & LANE FOLLOW-UP

By Lane S. Upton, Pine Grove, CA

I enjoyed Leonard Aquilino, Jr's article on the Bush & Lane radio restoration in the last *OTB.* I remember seeing a couple of these sets during the 1940's and they were a good quality radio. I am glad to see someone who is not only interested in the historical aspect of this hobby, but is also willing to do a proper restoration. The work done on the speaker and the condenser cans was impressive and is to be commended.

I would like to answer the questions that were posed at the end of the article and offer a comment on Leonard's operation of the set at reduced power line voltage.

(1) The reason for the high DC. voltage that was observed is that the 10 microfarad capacitor used in the filter network is causing it to act as a "capacitor input filter." The filter capacitors used in

radios prior to about 1932 were typically 2 to 4 microfarads. This small amount of capacitance meant that the power supplies were essentially operating under "choke input filter" conditions.

A capacitor input filter charges to 1.41 times the applied RMS voltage, while a choke input filter only delivers .90 times the applied RMS voltage. This means that the former design will deliver 1.57 times the voltage of the latter.

My suggestion for correcting this problem is to set the line voltage to the proper value (see comment below), then try different values of input filter capacitors in 1 microfarad increments until the proper DC voltages are obtained. The use of 10 microfarad units for the other filter capacitors is very acceptable.

(2) The measurement of voltages in the power supply section will be the same whether made by a 1,000 ohms-per-volt or a 20,000 ohms-per-volt instrument. The only time a difference would be apparent is when you are measuring circuits separated from the power supply by decoupling resistances. That difference can be corrected for by applying Ohm's law.

(3) The major difference between a 60-cycle and a 25-cycle transformer is the amount of "iron" — the cross-section area and the lamination stacking height. The number of primary turns may also be increased, but the turns ratio will be the same and the transformer performance will be essentially identical. These design changes for 25-cycle use are necessary in order to maintain the same reactance characteristics at the lower frequency.

(4) The power line being raised from 112 volts to 117 volts is an increase of only 4.5 percent. Vacuum tube filaments should be operated at their rated voltage within 5 percent for long term and within 10 percent short term. If they are operated at too low a voltage for long periods, the emitter can be damaged by exhausting the "space charge." This problem is often referred to as "sleeping sickness." My suggestion here is to adjust the line voltage until the tube filaments are at the proper voltages. One word of caution: when making measurements such as this, one should be sure that the test meter is correct on the low AC voltage ranges. Many are off by 5 percent to 10 percent.

Editor's note: since Leonard Aquilino hails from upstate New York, I'm not surprised that his Bush and Lane set had a 25-cycle power transformer. I know that certain generators at Niagara Falls supplied local 25-cycle power. One of my former employer's plants in the region was the last 25-cycle customer on a particular line. The power company paid for much of its conversion to 60-cycle equipment so that the service could be discontinued.

— CALENDAR

Continued from page 6

NFWA ANTIQUE RADIO MEET

Aug. 12, 1995, 8:30 a.m.-3 p.m.

Joint meet with AWA. Large radio flea market; equip. contest; 2 auctions (items at your table or donations to benefit club); talk by AWA's Bruce Kelley; exhibits.; etc. Coffee, soda, donuts, hot dogs available. Fee: $3 (no extra fee to sell); spouse, $2. Directions: NYS Thruway exit 49, Rt. 78 (Transit Rd.) N. 9 mi. Turn W. on Tonawanda Creek Rd. Go 2 mi. to New Rd. Stay S. of Tonawanda Creek. Motels at Thruway exit. For more info: Larry Babcock (716) 741-3082, or Gary Parzy (716) 668-2943.

SONORA, TRAV-LER and TRUETONE SUPER SIX TRANSISTOR RADIOS

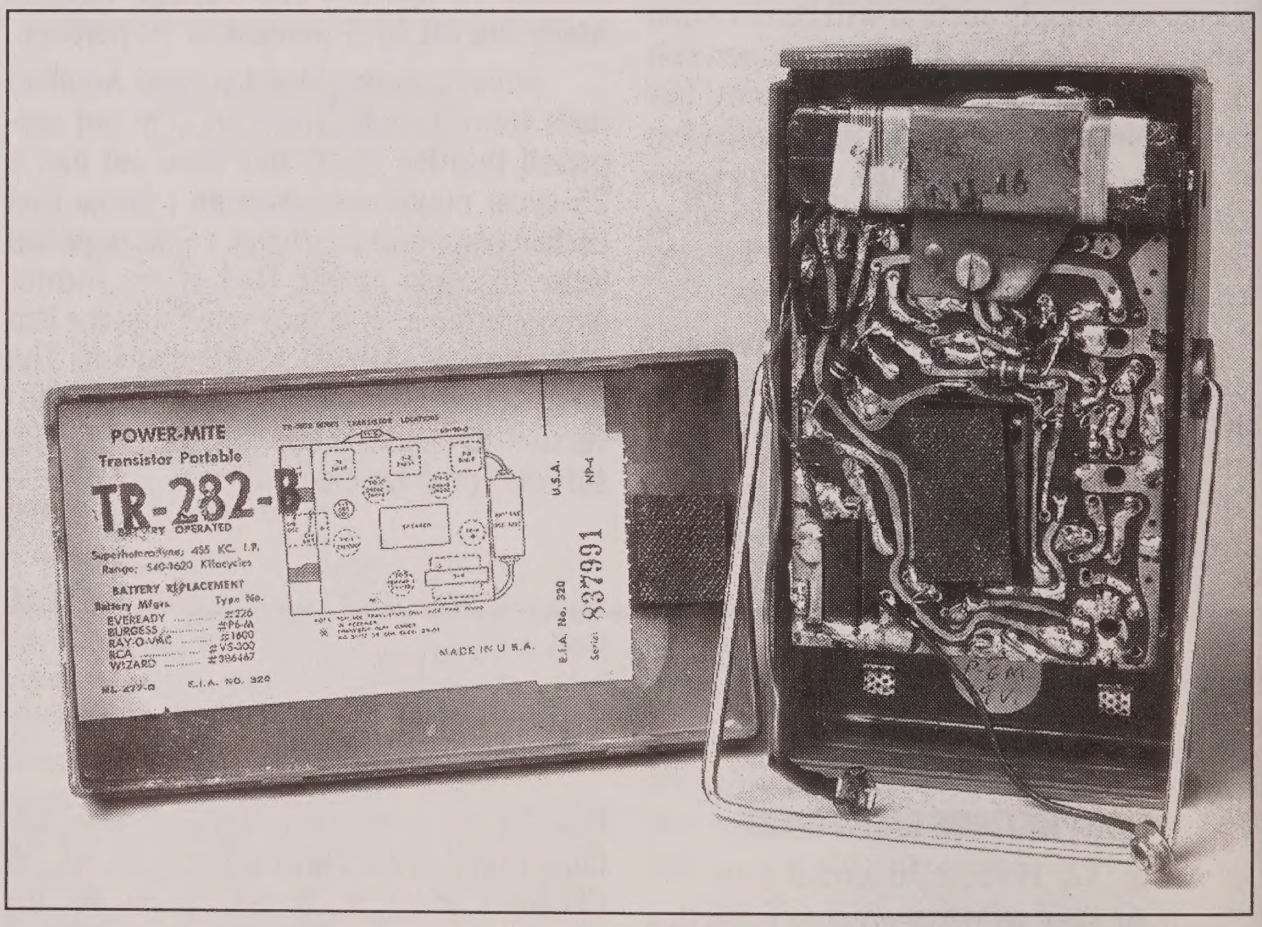
Ross Smith
1133 Strong Ave., Elhart, IN 46514

The three radios named in the head line were made in the U.S. by Trav-Ler Radio & Television Corp., 571 W. Jackson Blvd., Chicago, IL, in 1958.

All three, with several other models, used the same vertical case with a 1¾-inch diameter upper center tuning dial, a top right volume and switch knob extending out of the top, a swing handle and lower perforated speaker grill. The case measures 5½ inches high, 3½ inches wide and 1½ inches deep.

Pictured is the Sonora Model TR-282-B, which is the same model number as a Trav-Ler. It is called the "Super-Six Power Mite." The Truetone Model DC3902 is called the "Super 6 Transistor." Trav-Ler Models TR-280, 281, 282, 283 and others use the same case with different moulding inserts for the make and name.

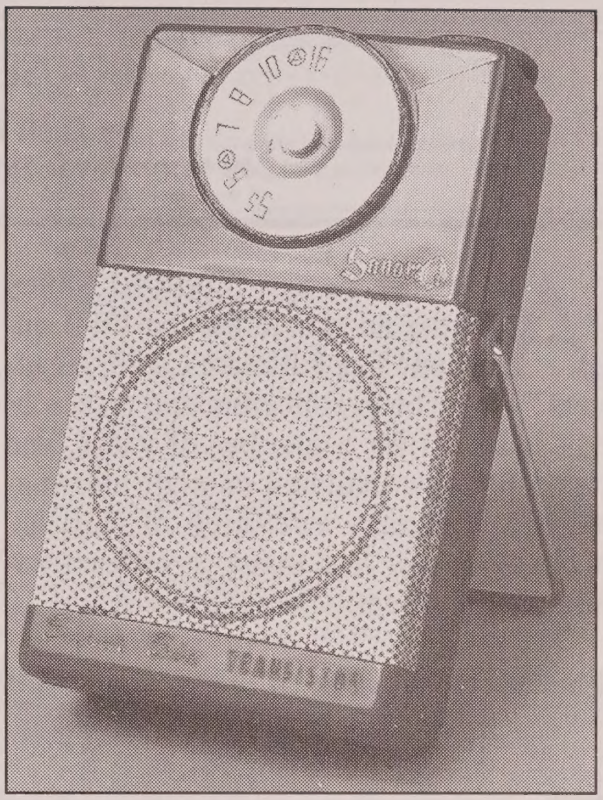
All of these sets are covered by *Sam's* set 425, page 15. All are listed in *Sam's* index, but only Trav-Ler is listed on the folder itself.



The circuit is a standard superheterodyne, except the second IF transistor serves as an IF and first audio amplifier in a reflex circuit, thus the "Super 6 Transistor" name for a five transistor chassis. The set is powered by a round 9-volt cell, an Eveready 226 or Burgess P6-M. In order to use the current 9-volt battery, the two large buttons need to be replaced by a standard plug-in terminal. The set has an open plate variable tuning capacitor for AM only, with two Civil Defense markers.

Does anyone have another make with this vertical case and right top volume knob? We would like to add it to the list.

Pictures courtesy of CTS-Turner Museum by Joe Carlson. The Sonora Radio belongs to Charles L. Miller of Elkhart, IN.



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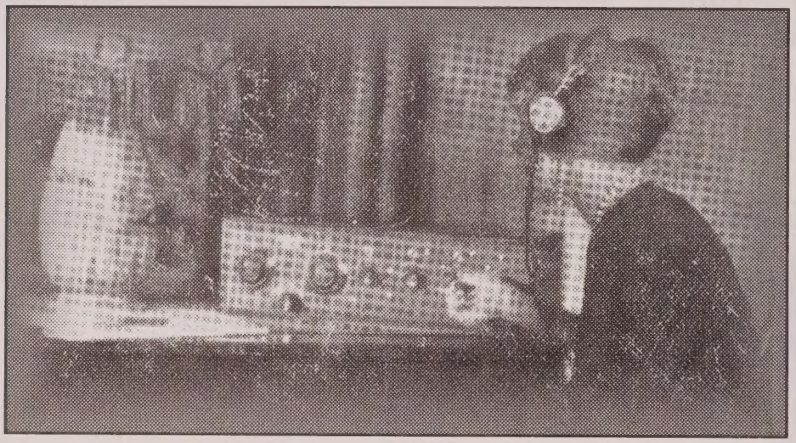
THE MATERIAL OF A THOUSAND USES

HEADSET UPDATE

By Dick Mackiewicz
1549 North River Rd., Coventry, CT 06238

A few years ago, Ludwell Sibley wrote an article for the OTB entitled "The Ultimate List of Headsets." I have been collecting and researching headsets for a number of years, and felt I had accumulated enough information to undertake a revision of that list. Collectors will find many significant additions, clarifications and corrections.



Some entries may seem redundant. Ludwell recognized this fact, but retained these entries "as reported" in order to preserve some historical value. I have followed his example in this respect. Ludwell identified headsets that were advertised but not reported in collections with an asterisk (*). This identification, too, has been retained.

I am strongly resisting the urge to call this list "The Penultimate List" because previously unreported or unadvertised sets seem to turn up, often in dusty tangled jumbles at flea markets or at some yard sale.

Ludwell, and I'm sure many others, questioned whether the high DC resistance advertised in some sets was obtained by use of resistance wire for winding the coils. I have personally unwound many coils. (I found, for example, that Tower phones actually had a bit more than the 20,000 turns advertised.)

The windings I have examined all appear to be pure copper. Manufacturers seem to have achieved high DC resistance in two ways: (1) use of smaller guage wire. For example: 1,000 ft. of #38 equals about 660 ohms. One lower guage, #39 about 830 ohms, down to #40, about 1,050 ohms! (2) "over-winding" the bobbins (coils).

Supposedly, when the thickness of the wire wound on an iron core solenoid equals the thickness of the core, any additional winding produces little, if any additional electromagnetic effect in that solenoid. Many, if not all headphone elements, exhibit various degrees of "over-winding."

Regardless of the manner in which higher DC resistance was achieved, this factor alone did not necessarily make phones with higher specifications more sensitive. There are many engineering considerations which determine the actual sensitivity of a given set of phones.

Higher DC resistance, however, did decrease the loading any set of phones presented to a circuit, and this was especially important with crystal sets and early one-tube sets.

My thanks to all who have helped with my on-going research project on phones, and all who continue to help. The list of names is too long to publish. As usual, I welcome any additional correspondence on this subject.

A.A.T American Amp. & Tel. Corp. Wash. DC 2k
Acme Specialty Co. Chicago (alum.)
2k single
2k dual
4k dual
Advance (*) Radio Mfg. Co. Chicago
A. E. Co. GD51009B (VR1) Z900, 72 ohms DC
AESCO Allied Pittsburgh 2k Supertest
Aerial Service Corp. ASCOR single
Air Champ 500 ohm single Air Champ Mfg. Co. NY
Airline Radio Deluxe (Bakelite) see Lakeside
2k single
2k dual
3k dual
Airline Radio Special (alum.) Mfg. by C.T.S.
2k dual
3k dual
Ajax Electric Specialty Co. (*) St. Louis
Allied Radio Corp. Chicago
American Bell 2k dual (Bakelite)
American Bell 3k dual (Bakelite)
Allied Radio Co. Lincoln 2.4k
Ambassador Sales Co. (Tower)
J. H. Ambrose Co. Pen Yan NY Jaco PUT 2k
American Bell Telephone Co. (watchcase receiver)
American Bell. see Allied Radio and Wayland
American Electric Co. Chicago
Army and Navy Type
Keystone (*)
Swedish American (*)
Victor (*)
American Electric 90B (single)
American Mechanical Laboratories Brooklyn AML (*)
American Radio Phone
Ampl Tone see French and United Aristocrat (*) see Dictograph
Army and Navy see American
Atlas Adjustable see Electric Products Co.
Atlas Multiple see Electric Products Go.
Atlas 3k (*) Atlas Radio Co. Chicago Ill.
Auth (Electrical Specialty Co. NY)
Auth
NY 2.2k
2k name on band only
Pat. 2k
Auth Elec. Co. NY Roycraft Tested Headset 2.2k
Automatic Electric Co.
Automatic Elec. Co. Chicago Automatic 1.5k
Avona 2.5k Jordan Marsh Co.
Boston Baldwin Salt Lake City Type C
aluminum diaphragms (single and dual)
fiber diaphragms (two variations) 1.5k
mica diaphragms 1.5k
mica diaphragms (two sizes) 2k
Baldwin Type E (*)
Baldwin Type F (*)
Barawik T770 2k (*)
BASCO Briggs and Stratton
2k dual
3k dual
Beckway Ralston Chicago BR 2k
Bel-Canto (Bel-Canto Radio and Tel. Eqpt. Co. NY) (*)
Beltone lo Z single
Benwood-Linze
Ben Franklin see-A.P. Merchant Co.
Ben Wolfe Electronics Corp. Ambassador
Berky Test Fone lk single
Berstan (*)
Berwick see Triangle
Best Mfg. Co. Best single
Best Mfg. Co. Newark 2.2k
Best Mfg. Co. Irvington NJ Receiver A-NB H-1 300 ohm
Bestone see F.Yman
Bethlehem Electrical Co. Newark Splitdorf 3k
Big Three Radio Corp. NY (*)
Big Three see Clearphone
Blue Streak Marinette Electric Corp. Marinette WI
1.2k single
2.4k dual
Brandes
(small model with ball-sc)cket headband connection)
(early model "Superior" on wide nickled band)
Admiral Matched Tone 3k
Navy Type Matched Tone
Superior
Superior Matched Tone
Superior Matched Tone
(as above, alum. caps)
Transatlantic (*)
C. Brandes Inc. N.R.I.
C. Brandes Inc. NY
(early model) 2k
Admiral 2k dual, 3k dual, 5k dual
Navy Type 3k
Superior (three variations) 2k
Superior (alum. caps) 2k
Brandes N.H.I. 2k (3 wire cord)
Brandes Superior 2k "Made in Canada"
Branston (C. D. Branston Buffalo NY)
Briggs and Stratton Co. Milwaukee (BASCO)
S. G. Brown London
Type D 4k
Type F
Type K,52 ohm moving coil
S.G.B. CLR 130 ohm dual
S.G.B. DHR #5
Brandes (boxed in engraved border)
S. G. Brown 2k adjustable
Brunswick (*)
Brush (crystal, hi Z) single, dual, lorgnette. Many styles, black and brown
Brush Type RJ
Brush, Clevite by Murdock (later)
Brunet & Cie Type F Paris
0. Brunet (French)
Bunnell 75 ohm single
Callophone Radio Products 2.4k
Caltrad
Cannon & Miller Co. Springwater NY
Dixie Cannon Ball 1.5k
Cannon Ball 2k
Camco 2.2k
Camco Grand
Camco Cannon-Ball
Cannon Ball Alnico Magnetic #15 2k
C.F. Cannon
Alnico Magnetic #15, lk single and 2k dual, 3k dual
Cannon Empire
Cannon Chief
Cannon Scout
Cannon Ball
Dixie (small and large cases)
Junior
Master 2.4k
Master 5k
C.G.E. Canadian G.E. Made in England 4k
Century Telephone Construction Co.
Telephone Type CX (CZ?) 159
Model SC single
Model SC dual 160 ohms
CZ 159 single 1.6k
F.B. Chambers & Co. single
Champion Jr. 2.4k Champion Radio Co. Detroit
Charles E. Chapin
Chicago Telephone Supply DX Special 2k
Churry Mfg. Co. Detroit Churry (*)
C.I.C. Connecticut Instrument Co. Stamford CT (*)

Continued on page 40

— HEADSET UPDATE

Continued from page 39

Clar A Dyne Crouch & Wilson Oneata NY *[Ed. Note: This town may be Oneonta, NY]*
Clarion see Radio Supply Co.
Clearphone Radio Corp. Big Three
Clearphone Co. Stamford, CT Solid (pat. 6/1/1909)
Clear Phone Clear Phone Co. (watchcase receiver)
CMC Cel Met Products Rochester NY 2k
Connecticut Telephone, Meriden CT (Connecticut Tel.& Tel., Connecticut Tel.& Elec.) (Phones and watchcase receivers)
- Connecticut (watchcase)
- Connecticut lk single
- Connecticut 200 ohm
- Connecticut R2A (Signal Corps) 2k
- Connecticut 3k
- Connecticut R15 with HB4 band 2k
- Connecticut 2.5k, lightning bolt logo
- Connecticut 607R 2k
- Connecticut 5312A 2k
- Connecticut 5313A 3k

Consolidated Radio Products
Consolidated Radio Products Co.
- R-2-A 2k
- R-14 2k
- HS-16A 150 ohms

Constat 2.4k StePhenson Laboratories Plainfield NJ
Chas. Cory & Son NYC Coryphone Radio 2k
S.H. Couch Co. Inc. 4660 (watchcase) (brass case) (Bakelite case)
S.H. Couch Co. Inc. Boston Couch 3k
Crosley
Crosley 2500 ohm
Crosley Cincinatti 2k
CTE (Conn. Tel.& Elec. Co.) P/0 H-3/ARR-3 30 ohms
Culver-Stearns 400 ohms Worcester MA
Davis 2k (Bakelite) (nickeled)
Davis see United
DEA 600 Ohm
DECO
DeForest Radio Tel.& Tel. Co.
DeForest Radio Tel.& Tel. Co. Jersey City DeForest 2k
Delta Electric Co. Marion IN
Delta 4k
Delta Gold Stripe 500 (*) 2.2k
Delta Gold Stripe 501 (*) 3k
Deluxe see International
Dependable see Trimm
Deveau see Stanley & Patterson, Solid Dfhb 44 (German?)
Dfha 42 4k
D.H.& E Co. SC #2 A K
Diamond 3k (*) Diamond Electric Specialties Corp. Newark NJ
Dictograph Products Corp. NY
- Dictograph CDC-49016 160 ohms
- Dictograph Acousticon single
- Aristocrat 3k (*)
- R-1 3k dual
- R-3 3k dual

Dietzen
- Dietzen 2.2k (*)
- Dietzen Navy Type 3k (*)
- Dietzen Special 2k
- Dietzen Tri Pole 3k

DLR No.2S 60 ohms
DLR No. 5
Dreyfuss Concert Type 2k P. M. Dreyfuss Co. Inc.
Dthf 43 2k
D/T/W (logo) w. vol. contr.
DTW 2k
Durophone see Warren
DX Special see Chicago
Dymac see Electrical Products
Eastern (*) Eastern Electric Co. Elizabeth NJ
Edson (*) 2k, 3k, Edson Radio Sales Providence RI
Edwards & Co. Norwalk CT Pat. 1872 (watchcase receiver)
E.G.M. Co. (single) (dual)
Eismann 2.2k
Electric Products Co.
- Atlas Adjustable
- Atlas Multiple

Electrical Apparatus Co. Detroit (*)
Elect. Ind. Mfg. Co. NY 2k
Electrical Products Mfg. Co. Providence RI Dymac. Type E 2.4k
Electro Importing Co. (single) (dual) (*)
Electro Trading Co. NY Berwick Supreme (single 1.1k) see also Triangle
Elkay 3k (*) Elkay Co. Newark NJ
Elwood (Elwood Electric Co. Newark)
Elwood (Bridgeport CT) (single lk) (dual 2k & 3k)
E.P.M. 3k
Ericson, Societe Des Telephones Ericson Colombes (Seine) Brevette SDGD 500 ohms (France)
Ericson 4k (France)
Essex (*)
Everett 2.7k
Everett Model E2
Everytone see Pacent
Excello (*) see Rex
Featherweight Twin Tone
Featherweight Twin Tone, New
Federal Tel.& Tel. Co. Buffalo NY
- 52W 3.2k
- 53W 2.2k
- The Liberty A&N 2.2k

Federal-Brandes Inc. Newark Brandes (also see Brandes)
John Firth & Co. NYC. Made in Germany (vol. Contr.) 2k
John Firth & Co. Inc. Germany 1.2k single
John Firth & Co. Made in Germany ("SEIBT" stamp) (single and dual)
Freed-Eismann Model 124 single
C.M. French Mfg. Co. Ampl Tone
Friedlander-Koppler Radio Service NY Wellbilt (*)
Frost Fones (H.H. Frost Chi.)
- No.161 2k
- No.162 2k
- No.163 3k
- No.171 3k
- No.172 3.2k
- No.174 2k
- No.175 3k

Fujiki Denki Co. Ltd. E55 2k
GEC (Gecophone) Reg. No. 691375 (BBC Stamp)
Gemphone see Radiogem
Gem Earphone Co. (Hearing Aid)
G.E. F4 200 ohm dual General Electric
General Radio Company Limited London. General Radio (BBC Stamp)
Gilbert, A. C. 2k dual New Haven CT
Globe Electric Co. Globe (single)
Globe. Glbe Phone Mfg. Co. Reading MA (plain)
Globe (alum. w. picture of globe)
Globe Silvertone 2k
Goldak Type 45 4k The Goldak Co. Glendale, CA
Gold Seal see Stanley & Patterson
Gold Stripe (*) see Delta
Gold Tone (*) Gold Tone Radio Co. NY
Goldschmidt Corp. NY (importers) (*) N&K
Grandtone 2k Grandtone Radio Phones
Gundlach Manhattan Optical Co. Rochester (*)
Hamburg Bros. Pittsburgh
- Type E25
- Type L32 2.2k dual
- Type B 1.6k dual

Hamburg & Hamburg Pennsylvania 2.5k and 3.2k dual
Hardscog Mfg. Co. Ottumwa IA
Hart & Hegeman Mfg Co. Hartford CT H&H
Hartford Metal Products Co. VOX

Harvey-Wells Southbridge MA 75ohm dual
Haynes-Griffin Radio Service (*) see Tested
Holley Mfg. Co. Holleyphone
Holtzer-Cabot (no city) 2k
Holtzer-Cabot single (with ball & socket connection to headband)
Holtzer-Cabot No. 4 National (*)
Holtzer-Canot Boston/Chicago (small early design)3k
Holtzer-Cabot Boston
  Boston 2k
  Boston No. 2 Universal 1.7k
Holtzer Cabot Elec. Co. Telephone
Huball (*)
Hubmill TS.5 2k
Henry Hyman & Co. Bestone
H&H see Hart
Illinois see Wayland
I.C.A. #23 2k dual Insuline Corp. of America NY
International Radio Telephone Aparatus Co. NY Deluxe (*)
Interocean Radio Corp. Jersey City NJ (*)
IWB (*)
Jaco see Ambrose
Jolley Radio Co. NY (*)
Kellog 64C
Kellog S&S (Switchboard & Supply) Co.
  (plain)
  Chicago 64-B 2.4k
  82-A 200 ohms
  85-A (unit)
  87-A (unit)
  R-14 (U.S. Army) 2k
Colin B. Kennedy
Kennedy, Kennedy 3k
Keystone (*)
Kilbourne & Clark 2k
Kodel Radio Corp. Cincinatti Quality (*)
Kreigsmarine
La Belle Saper Phone 2k Montreal Canada
Lakeside Electric Works Chicago Airline 2k, 3k
Lark (*) see Leich
Learadio Type L 100 ohm dual Dayton OH
The Liberty see Federal
Leich Electric Electric Co. Genoa IL Lark (*)
Leich Electric 2k
Lincoln see Allied
Lincoln Jr. Lincoln Radio Mfg. Co. 3k
Litewate (*) see Premier
Little Gem see Triangle
Little Spitfire Made in USA (Tower)
Little Tattler see Marinette and Tower
M (MESCO) Manhattan Electric Supply Co.
Mackay Radio 3k
Magnus Electric and Radio Mfg. Corp. NY Magnus 580 2k
Maico 13282
Majestic
Manhattan Electrical Supply Co.
  MESCO 2500 2k
  MESCO 2501 3k
  Red Seal 2.5k
Marinette Electric Corp. Marinette WI
  Blue Streak 1.2k single, 2.4k dual
  Little Tattler (see slso Tower)
D.W. May Inc. WBS Phone
Mears Earphone NY (hearing aid)
A.P. Merchant Co. Boston Ben Franklin 3k
Meteor 2k (see also Sears Roebuck)
Metro Newark NJ
Metro (*) (see also Pal)
Mico (*)
Miller (*)
Miraco Navy Type 2.5k Midwest Radio
Monarch Tel. Mfg. Co.
Montgomery Ward Airline Special
Moretone Radio Co. Chicago Moretone 3k
Moss-Schury Mfg. Co. Detroit Repeater 2.4k
Murdock (Wm. J. Murdock Co. Chelsea MA)
  #55 3k (ball and socket connection to headband)
  #56 "1000" and "1500" (2k dual, 3k dual)
  #57 (*)
  "Special"3k (metal case)
  (watchcase) 100 ohm
  Type P-23 CAATC No. 1200
  Type R-14 Signal Corps (lk single, 2k dual)
  U.S.V.A. 2k (dual)
  "For Training Purposes Only" 2k
  CZ 291 160 ohm (dual-SOLID bobbins)
  8 ohm (modern-very late)
Wm. J. Murdock Co.
  (plain two sizes)
  H-58/U
  HS-16 100 ohm
  Chelsea MA (watchcase) 100 ohm
Music master Co. Phila. (*) musio (*)
National (*) see Holtzer-Cabot
Navy Ordinance Supply Co. Navy MIMXXIV 350 ohm
Nerco see Newark
Newark Eng. and Tool Co. Nerco Phone 2.2k
Neufeldt & Kuhnke Kiel Germany
  N&K 3k
  N&K 6k
  N&K model D
Newcomb (Newcomb Audio Products Calif.)
  600 ohm dual
  2k dual
Newton Pressed Steel & Mfg. Co. New Tone
Newton Pressed Steel & Mfg. Co. Newton MA Superette 1.5k
Newman-Stern Co. Cleve. OH Red Head 3k
New Yorker (see Wayland)
N&K (see Goldschmidt)
No Name
  Pat'd 9/2/1884 75 ohm
  Made in France 2k
  Made in Germany (stamped in headband) (large nickeled case)
  Made in Japan (ww2) 2k
  Model 2P 2k
  Shaft from band goes through ball on case
  The Rex (see also Trirnm)
  10A B W/2, metal band with ball socket
  No. 29 (black)single
  No. 560 single 2k
  1000 (nickel) single
  2.4k dual (50s)
  3k dual with ball/socket
  2k dual, terminal blocks on back of receivers
Northern Electric 509 120 ohm dual
N.R.I. Made Expressly For lk
Ohio Radio Mfg. Co. Cleve. (*)
Olson PH-27 Olson Radio (mfg'd by Sawafuji) 10 ohms dual
Omega 4k dual (band lettered West Germany)
Orator Radio Corp. Washington DC (*)
Oriphone (lorgnette) C.W. Harper
Outlet Co. Providence RI 3k
Pacent Electric Co. NY Everytone 2.2k dual, 3k dual
Pal Sales Corp. Jersey City NJ Metro
PAL
  (nickel plated)
  (brass-painted black)
  (trademark) 500 ohm
Peerless see United
Penberthy Injector Co. Pico Made in Detroit
  2.2k
  4k (*)
Pennsylvania see Hamburg
Penn Headset Co. (*)
Perfectone (*) see Teleradio
Philmore (plain)
Philmore Mfg. Co. New York
  Pure-Tone
  Wonderphone

Continued on page 42

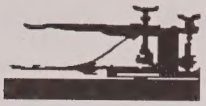
— HEADSET UPDATE

Continued from page 41

Pico see Penberthy
Pival 4k
Parts Radio Mfg. Co. Fresno CA. Prmco (*)
S.A. Potter Tool & Machine Works New York Precision 2k
"Precision Phones for Precision Hearing" Chicago 300 ohm
Premier
Premier Electric Co. Chicago Litewate (*)
Professional see Trim
Quality see-Kodel
Racon New York City Coherer 33.5k @ 1 kHz
Radio Industries Corp. NY Rico
    Rico Tri Pole 2.2k
    Rico No.6 2k (*)
    Rico No.7 3k (*)
Rico Deluxe Tuned Adjustable
    #20 2k (*)
    #30 3k (*)
    #40 4k (*)
Radiocieve 2.2k Radiocieve Mfg. Co. Newark
Radiocraft Hi Power lk single
Radiogein Corp. NYC. "Gemphone" lk single (*) (wood case, kit)
Radiotive Corp. Brooklyn Silken Voice (*)
Radio Receptor Co. Type E
Radio Receptor Co. RR Co. Type K
Radio Speakers Inc.
    R-14 2k dual
    Receiver, R-16 Signal Corps U.S. Army
Radio Summit Products Inc.
Radio Supply Co. Hornell NY Clarion (*)
Radio Telephone & Telegraph Co. NY Kismet (*)
Randolph Radio Corp. Chicago Special 3k
RASCO (*)
RCA
    RCA (single)
    RCA 1.5k
    RCA 120 ohm dual
Red Head (*) see Manhattan
Red Head see Newman-Stern
Repeater see Moss-Schury
Rex Radio Works Chicago Excello
The Rex (see also Trim)
Rheem (Made in Japan)
    750 ohm
    Rheem 120 ohm
Rico see Radio Industries
R.M.C.A. 2.7k
Rola ANB Hl
Roller Smith Co. NY
    Universal 2.5k
    Universal B 2k
Royal Electrical Laboratories Newark Royalfone 2.2k
Royal (foreign) 4k
Roycraft see Auth
RR Co. see Radio Receptor
R & Z Roth & Zillig Buffalo NY 2k
Samson (watchcase) 100 ohm
Samson (watchcase) 80 ohm (SOLID bobbins)
Samson Jr. Pat. Pend. 74 ohm (watchcase)
Sawafuji SF 20 2k
Schwarze Electric Co. Adrian MI. 2k, 3k
Scientific Electric Works MA The Scientific 20,000 Turns
Sears Standard Quality 2k
Sears Roebuck and Co.
    Meteor (CTS)
    WLS
    Sears Roebuck 3k (*)
Seco (*) see Spielman
Sensiphone Superex
    6 ohm dual
    lk single
Shamrock 2k
Shure Bros. Receiver ANB H-1
Siemens London (BBC Stamp)
Siemens & Halske 1089
The Smeltzer Co. Browne
Solid
    Couch Trademark (also see Clearphone Co.)
    Couch Trademark (watchcase)
    Pat'd 8/14/1900 3k single
    (watchcase) 75 ohm
    Deveau (watchcase)
    dual 170 ohm
Songbird Matched Phones 2.2k
Songbird True Tone Radio Phone 2.2k
Spartan Electric Corp. NY (*)
Speak-O-Phone 4k NY
Splitdorf see Bethlehem
Sraco (*) see Standard
Standard Radio Corp. Chicago Sraco (*)
Standard Electric Mfg. Co. Standard MOD 8
Stanley & Patterson
Gold Seal Radio
Deveau Gold Seal
STC Standard Telephones & Cables PTY LTD Australia 3.2k
Steimetz Wireless Mfg. Co. Pittsburgh (*)
Sterling London
    (no BBC Stamp) (twin magnet) 4k
    (BBC Stamp) (twin magnet) 2k
    (no BBC Stamp) (single magnet) 4k
Strawbridge & Clothier WFI Phila. PA 2k
Stromberg Carlson 2k
    2k with ball/socket connection to headband (early)
    No. 2A
    No. 3A
Summit Radio Products Inc. Jersey City
Sunlight Lamp Co. Newton Falls Ohio (*)
Superba English Mfg'd (BBC Stamp)
Superette see Newton
Superfone Elec. Co. Boston Superfone 3k
Super Elec. Co. Super-Fone
Superior see Brandes
Superior Navy 3k San Fransisco
Superior Products
Supertest 2k AESCO Allied Pittsburgh PA
Swedish-American see American
Swedish-American Telephone Mfg. Co. Chicago (*)
TBH Radiio Co. Dansville NY (The Best Headset)
    Viodyne
    Violana (*)
    Type 6A 2.2k (*)
    Junior 2k (*)
TBM (*)
Telefunken
    EH 333
    EH 333b 4k
Telephone Bookholder Corp. (?? Dubious Report) Dansville NY
TBH 2k
Telephonics
    50 ohm
    300 ohm
    TDH-39
    TDH-49
Telephonics Corporation
    Type TH-37
    Type TH-37A
Teleradio Engineering Corp. NY
    Perfectone (*) 2k (*)
    2.2k (*)
    3k (*)
Telex 3725
Tempst Prod. Mfg. Co. Indianapolis Tempest 2.2k
Tested Radio Products Inc. NY Haynes-Griffin
Thomas 2k
J. S. Timmons Phila. 2.5k
TNC (TMC?)

(BBC Stamp)
London SE 21 (BBC Stamp)
Tokyo TK 24 (Made in Japan) 4k
Tokyo tsushinki KK Radio Headphone
TK-24
TrK 2k(single)
Tower Mfg. Corp. Brookline MA Ambassador 3k
Tower Mfg. Corp. Boston
Little Spitfire
Little Tattler (also see Marinette)
Tower Mfg. Corp.
Scientific (variations in metal of case and printing)
Scientific Navy Type (two versions)
Tower
Super Sensitive Navy Type
Super Sensitive (two versions) 3k
Tradio 2.4k Newark NJ
Trego 2k
Triangle Electro Trading Co. NY Berwick Supreme
(single 1.1k)
(dual 2.2k)
(dual 3k) (*)
(also see Electro)
Little Gem
Trimm
(plain)
Acme (single and dual)(several variations)
Acme Deluxe
Commercial
Dependable
Featherweight
Featherweight (lorgnette) 2k
Professional
Type B
Type K (CTX-49003) 2k
Type L 250 ohm
Trimm Inc. Libertyville IL
Acme 1.5k
Dependable 2k
Trimm Inc.
Receiver ANB H-1
Receiver CrX-481964
Receiver R2A Signal Corps U.S. Army (single)
Trim Radio Mfg. Co.
(large and small Bakelite) (black and brown variants) (3.2 ohm to 5k dual) (single, lorgnette holder) The Rex (alm. and black variants, single and dual)
Trimm Radio Mfg. Co. Chicago
Dependable (*)
Professional (*)
Tri Pole Industries Corporation RICO
True-Tone Supersensitive 1.5k
True Tone Radio Mfg. Co. Chicago True Tone 3k (*)
Turney, Eugene Laboratories Inc. Newark NJ 3k dual
U/S Corp.
Union Fabric Co. Derby CT Ampl 'Ibne (*)
United Radio Corp. Rochester NY
Davis (black) 2k
Peerless 2k (alum.)
Peerless 2.4k
Universal see Roller-Smith
Utah Chicago Receiver ANB H-1 225 ohm
Utah Manufacturing Co.
Victor (*) see American
Victor Radio Mfg. Co. Chicago
Victor Telephone Works Chicago 1.6k dual
Viodyne see TBH
Violana see TBH
VOX see Hartford
Warren Radio Phone Mfg. Co. Inc.
Warren Radio Phone Warren RI Warren 2.2k
Warren Radio Phone Mfg. Co. Warren RI Durophone (alum. or black) 2.4k
Wayland Radio Mfg. Wayland NY
American Bell 2k
American Bell (alum.) 3k
The Illinois 1. 5 and 2k
The New Yorker
WBS Phone see May
Webster Electric
Weiner see Wireless
Welbilt (*) see Friedlander
Western Electric
U.S.A.
Pat. Appl'd For 2k
43
45
136 (single)
146A (single) (watchcase)
186 (single)
189
194W 2k
400 (single)
509 2.2k
509W (Pat'd 7/23/1918) 2.2k
516W (single) 2.2k
525
528 (50 ohm/receiver) (single and dual)
528BW 80 ohm
528DW
711A
1102 2.2k (20K at AF) (*)
101B (*)
ANB H-1 250 ohm
CW 834
CW 49003 2k
P11 Signal Corps 2k
Capsules, HA-2 50 ohm ea. (single and dual)
Westinghouse FC 2k
WFI see Strawbridge
White Beauty (*)
Windsor Castle 3k (*) DX Radio Co. NYC.
Wireless Specialty Co. Weiner Type 2CR
Wireless Specialty (*)
WLS Special Headset (variations) (see also Sears)
WLS Special 3k
Workrite (*)
WRC World Radio Corp. Boston MA
Zenith (lo Z dual)

VOLT-X
VARIABLE GRID LEAK
NEW!
A BALL-BEARING
Grid Leak That Stays Put
Screw adjustment, expansion contact and resistance unit that cannot wear or tear.
VOLT-X GRID LEAKS
are positive and smooth in action with an accurate range of from one-half to fifteen megohms.
They fit any standard leak mounting, and get the absolute maximum from your tubes. They do not wear out.
Grid Leak $1.00
Grid Leak Mounting .. .30
Balancing Resistances for Super-heterodyne and other circuits 30,000-150,000 ohms.
BURTON & ROGERS
MFG. CO.
755 BOYLSTON ST. BOSTON MASS.



KEY and TELEGRAPH

EDITED BY

Roger W. Reinke

5301 Neville Court, Alexandria, VA 22310-1113

Please include SASE with correspondence.

FOR THOSE WHO HAVE LOST THEIR GRIP

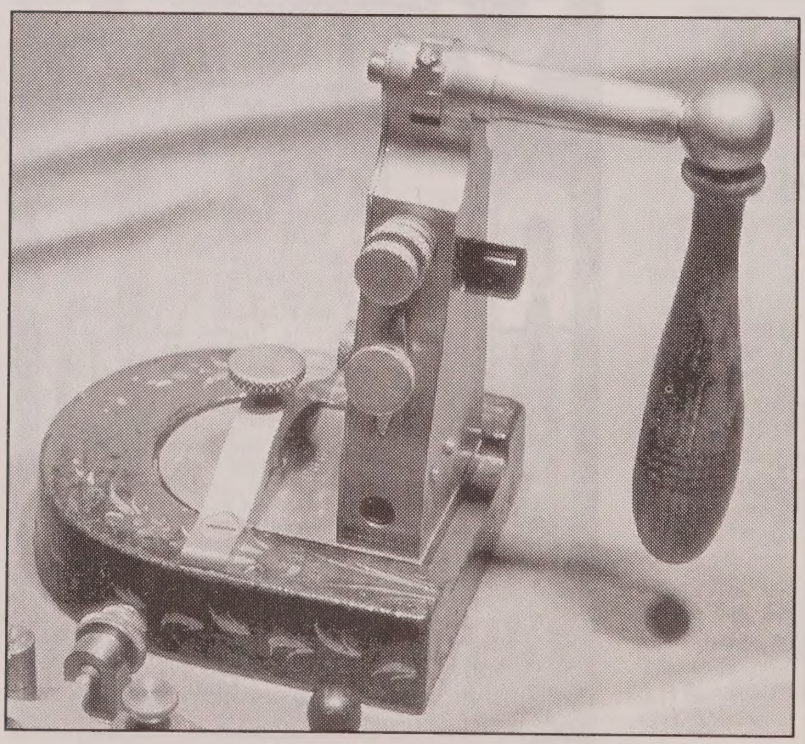
The promotional piece for the Yetman Transmitting Typewriter states: "What telegraphers suffer from the effects of the strain of hand work is too well known to require mention here. All operators have suffered more or less from it. Thousands have been totally disabled by it."

The unnamed malady in this quote is "glass arm," the bane ofthe brasspounder whose wrist and forearm muscles grew tender as the shift wore on. Whatever the true number of disabling cases was, it was sufficient to foster a number of innovative keys intended to provide some relief.

Probably the most familiar of these was Jesse Bunnell's Double Speed Key with its sideswiper motion. Semi-automatic keys were the eventual remedy, of course.

We noted in the August 1993 issue of the *OTB* Walter P. Phillip's attempts to relieve some of the pain by substituting non-sticking steel for platinum contacts. Phillips was not alone, for in the 1880s and '90s a number of other inventors claimed to cure the syndrome with the use of their keys. None enjoyed any significant commercial success, which leads one to wonder how serious glass arm really was.

The oddest of this odd lot keys was a product of Foote, Pierson & Co. labeled by the company as the "20th Century Key," but called the "pump handle" by everybody else. The photos show it as it was to be used, and also its internal workings, with the connecting cord and wedge removed. Patented on December 24, 1901, the original advertisement for it from an August 1902 edition of *Telegraph Age* is also shown. "Makes fast sending Easy (sic)," the ad claims in a flight of wishful thinking.



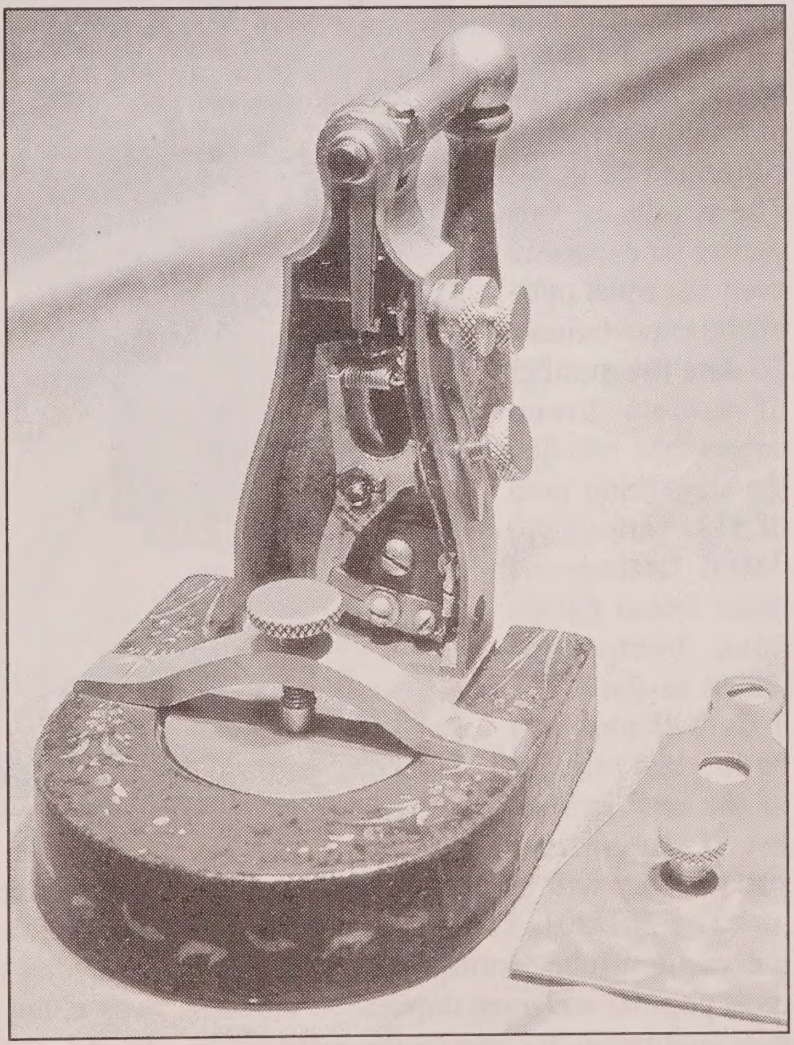
The large handle suggests that a lot of lateral motion would be involved in its operation, but one finger against the handle is actually all that's required. Unlike the

THE TELEGRAPHER'S FRIEND
The 20th Century Telegraph Key
POSITIVELY CURES
and prevents Loss of Grip.
Makes fast sending Easy.
Send for Booklet and Net Prices.
E. S. RUSSELL, General Agent
253 BROADWAY, NEW YORK.
FOOTE, PIERSON & CO.
NEW YORK
Send for Net Prices
In writing mention Telegraph Age.

the base had disappeared. We're reminded of the late Stuart Davis's fervent wish to find a base for his pump handle, on display in his "National Telegraph Office." He never did. Martin's introduction of the first Vibroplex around 1904 likely captured the sore wrist market. Foote, Pierson's solution to the problem may have appealed to some, but lugging around a key weighing more than four pounds — even more than the cast iron-based bugs — probably aggravated rather than cured glass arms.

sideswipers, contact is made on one side only. Employing a full grip on the handle might be comfortable for some, but it's hard to imagine how one could maintain any speed that way.

The angle of the handle to the base could be adjusted by loosening a set screw clamping the contact arm to the shaft. The spring tension and contact gap are both adjustable by means of screws on the side of the body, and the circuit closing switch is conveniently under the handle. A heavy cast iron base, in darkish red with yellow and blue floral decoration, eliminates any sliding around on top of the desk. The body can be easily detached from the base for portability; the legend finely painted on the base reads "Twentieth Century Portable Key Base / Foote, Pierson & Co. Sole M'fr./New York."



The last ad we can find for the pump handle appeared in September 1905 with a photo of the mechanism-portion only bolted to a desktop with a wingnut —

THE VACUUM TUBE

EDITED BY

Bro. Patrick Dowd, W2GK

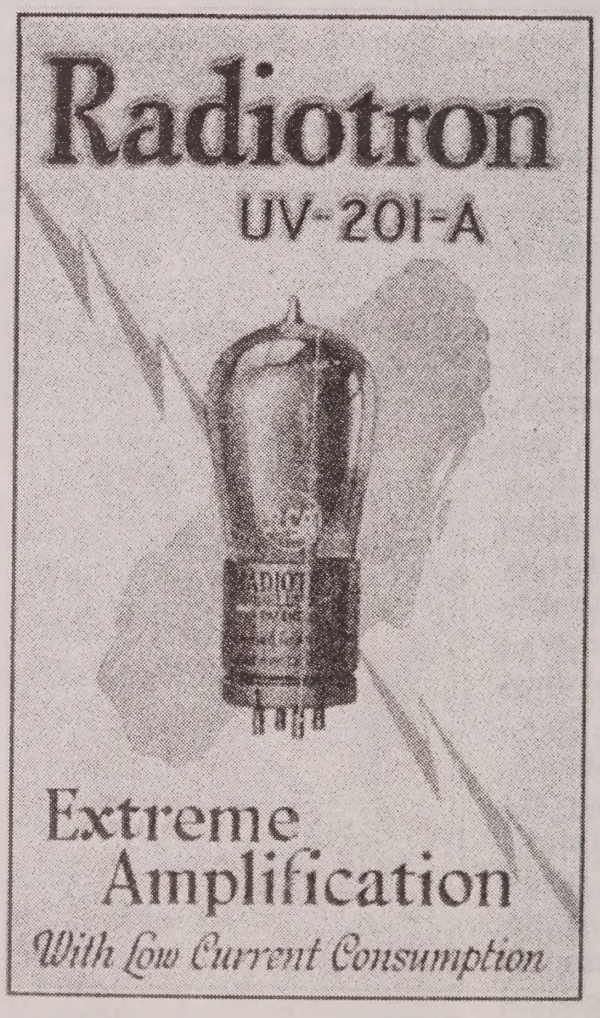
425 Paramus Rd., Paramus, NJ 07652

Please include SASE for reply.

THE 201/201-A SAGA FINALE

Nine years ago we started what, at the time, we thought would be a routine project: to determine the number of brand names under which the 201/201-A had been released. We requested the help of a number of tube collectors and other interested AWA members.

Over the intervening years the list of brand names has continued to grow. The results of this survey far exceeded even our most optimistic expectations. To date the number of known brand names has reached the staggering total of 513. Various updated listings of these brand names have been published in the OTB. This will probably be the last printing of the new general list. If other names surface they will be printed separately.



The 201/201-A, the glamour tube of the vacuum tube world, was perhaps the most popular and most duplicated vacuum tube ever made. It came on the scene with the birth of radio broadcasting and grew up with the new industry. Originally developed and manufactured by the General Electric Co., the tube was christened the UV-201 and released by RCA in December 1920. It was distributed under the Radiotron label in the east and under the Cunningham label (C-301) in the west. Originating with a brass base, short pins and sealing tip, it underwent many structural, electrical and cosmetic improvements over the years.

In 1923 an improved thoriated-tungston filament and a magnesium getter were added and the tube renamed the UV-201-A (C-301-A). In 1924 the brass base was replaced by a composition base and the sealing tip eliminated. The following year, with the addition of a new long pin composition base, its name was changed to UX-201-A (CX-301-A). In the early '30s it was adapted to the

"modern dome" (ST) bulb and its name shortened to 01A. It continued to be manufactured throughout the '30s for replacement purposes.

The list of brand names that follows reflects many vendors — set makers, private brand names, bootleg (nonlicensed) manufacturers, regional producers, etc. In addition, there were numerous tubes marked "Type 201-A" or simply "201-A" without brand names. Note: The 201-AA, 201-B, and 201-C are 201-As with low current drain filaments (early '30s).

The list of brand names was compiled from the contributions of many members of the AWA. A sincere thanks to all.

AAA-6000
ACE
Acme
Action
Advance
Aerodyne
Airhawk
Air-King
Airline
Airmaster
Airtron
Ajax
Aladdin
Alltron
America
American Radio Tube
Amertron
Amor
Ampladyne IV (Germany)
Amplifier
Amplitron
Anylite Electric
A&P
AP Labs
Apollo
Aratron
Archatron
Arco
Arco-tron
Arcturus
Arion
Aristocrat
Arlington
Armor
Armur
Arotron
Atlantic
Atlantis
Atlas Type "A"
Atron
Atwater Kent
Audiotron
A.W.A. (Australia)
A-1 Wonder
Barium Tube
Beacon
Belco
Belknap
Belltone
Bestone
Birk Morton (BM)
Blazing Train
Bluebell
Blue Bird
Blue Grass
Blue Ribbon
Blue Streak
Bluetron
Boehm
Bond
Boone
Bosch Radio
Brede
Bremco
Bright Star
Brightson Blue
Brilliantone
Buck
Bull Dog
Bumblebee
By Heck
C-201-A
Capex
Cascade
CD-201-A
Cecilian
CeCo
Champion
Chesterfield
Chibar
Clarion
Claritone
Claritron
Clearatone
Cleartone
Cleartron
Clover
Coast To Coast
Columbia
Comet
Commander
Concert
Concert Master
Continental
Cornell
Coronado
CPC
CR
Crescent
Crescer
Crosley
Croydon
Crusader
Crystal
CTX-201-A
Cunningham (GE & Westinghouse)
Curtiss Energy Co.
CW-186 (Navy)
Cymotron (Japan)
Daven
Davis
Defender
De Forest
Delco
Denmark
Detectron
Diamond
Diana
Diatron
Dilling
Dixie
Dis-X-Ron
Donle
Double Life
DRC
Duotron
Duovac
Duraco
Duratron
Duro
Dutch Radio Valve
Duval
DX-201-A
Dynamic
Dynetron
Eagle
Echotron
Eclipse
Econotron
Econotube
EDLO
Electrad Triode
Electron 6000
Elektron
Elitetron
EMCO
Emperor
Empire
Empiretron
Endurance
ERC
ERLA
Essex
Eveready-Raytheon
Excel
Excello-Tron
Falck
Falco
Farad
Fearnola
Federal
Federal Supreme
Field
Flair
Franklin
Fultone
G-a-30
Gebhart
Gem
General Electric
General Electric (Canada)
Globe
Gloria
Gold Bond
Golden Comet
Goldentone
Gold Seal
Goldtone
Good Luck
Goode Tube
Grand Tone
Grant's Special
Green Seal
Halcyon
Harmonique
Harp
Harvard
"H" Brand Blue
Heliodyne (Germany)
Herculese
H.H. Co.
Hi-Constron
Highest Grade
High-Mu
Hi-Mu
HO
HOY
HR-O
Hygrade
Hylon
Hytron
HyVac
Ideal
Imperial
Imperialtron
Iroquois
Jaeger
Japanese UX-201-A
JA REG
J&R
Jayes
Jewel
Jove
JRC
Kazoo
Keen Tone
Kelly
Kelvin
KenRad
Keystone
Kilbourne & Clark
Kinodyne
Kleen Tone
Kleer-Tone
KMA
KR
Knight
Kwiklight
Lafayette
LaSalle
Leader (The)
Leco
Lectron
Lee
Legion
Leradion
Lewis De Luxe
Lincoln

Continued on page 48

— THE 201/201-A SAGA FINALE

Continued from page 47

Livestone
Lord Baltimore
Loudspeaker
Luro
L.W. Cleveland Co.
Lyric
Macleco
Macy's
Magnatron
Magnavox
Magnet
Marathon
Mark's
Marle
Marvin
Marwol
Master
Mastertone
Maston
Maximus
Maximus Quality
MECO
Meier & Frank
Mellotron
Melrose
Mercury
Meteor
MIDCO
Milo
Milo Blue Bell
Miraco
Monotron
Mozart
Murdon
Music Master
Musiktron
Musselman
MX 201-A
Myers (01-A)
Nathans
National National Products
National Union Navigator
Neonlite
Neontron
Neptron
Neptune
Northome
Novatron
Novo
Nultone
Nu-Tro
Nutron
OK
OKR
Operatone
ORC Detron
Oreco
Oriole
O&T Electric Co.
O-T Olney Co.
Ozarka
Pace Setter Panama
Paramount
Peak
Pearson
Peerless Radio Valve, Ltd. (Canada)
Peertron
Penn Wave
Pep Boys
PepTone
Perfect
Percfectone
Permatron
Perryman
Phenix
Philco
Philips (Holland)
Philmore
Phonotron
Pilot
Pilotron
Pingree
Pioneer
Pla-Mor
Plarite
Playto
Playtron
Pliotron
Powertone
Powertron
Premier
Prextro
PRL
Princeton
Pur-A-Tone
Puritron
QRS
Quadrotron
Qualitron
Quality
Q.V. Tron
RE-DEX
RA-DEXTRON
Radios
Radiotone
Radiotron (GE, RCA & Westinghouse)
Radiotune
Rainbow
Ranger
Rayo
Ray-O-Vac
Raytheon
Raytron
Rayvac
RCR
R.E. 58 (Telefunken)
Real-Tone
Reception
Red Printing
Regal
Reliance
Remarc
Rextron
Ritetone
Robun
Roice
Rolls Royce
Roxy
Roy
Royal
Royal Blue
Royale
Royalfone
Royaltron
Roytron
RSK
RVC (Canada)
RY-TONE
Samson
Savoy
Schickerling
SE-4373 (Navy & selected 01A)
Sea Gull
Shelby
Shepherd
Signal
Silver
Silver Domino
Silver King
Silver Shield
Silvertone
Silvertron
Simplex
Skyline
Sky Sweeper
Slagle
Solartron
Song Bird
Sonora
Sonotron
Sovereign
Sparton
Speed
Standard
Standard Black-Base
Stanton
Star (NJ)
Star-Ko
Star Tube (Holland)
Sterling
Stewart-Warner
Stratford
Strongson
Sturdy
Sunlight
Super Air Castle
Auper Airline
Super-Het
Superior
Superior Tone
Supertone
Supertron
Supertron Precision
Surety
Sylfan
Sylvania
Tan Box
Taylor V.T. Co.
Tayrad
Tecktron
Teletron
Televocal
Teltron
Thermionic
Thermotron
Thoria
Thorolla
Thurman Thermionic
Tipless-Rytone
Titan
Titania
Tobe
Trail Blazer
Trav-ler
Traveler
Trego
Triad
Triple Tone
Trojan
Troy
True Value
Tung-Sol
T-X
Ultra Type-201-A
Unitone
Unitron No Bee
Universal
Ureco
USALITE
Vactron
Vacuum Tube Type "A"
Vancy
Van Dyke
Van Horne
Venus
Veribest
Vesta
Viking
Vim
Vitavox
Vogue
Vogue Non-Pareil
Voltron Volutron Vox
VT-30 (Army)
Walco
Wards
Wardwear
Wasco
Wavetone
WDRC
Weile
Weltone
WES
Western Electric
Western Lab
Western Quality Tube
Westinghouse
Westinghouse (Canada)
Weston
Westron
Williams Certified
Wizard
WLS
Wonder-Tone
Wonder Tube
World
WRC
X-501-A
Yankee
"Z"
Zenith
Zetka
Zetka Process

QUO... QUO...

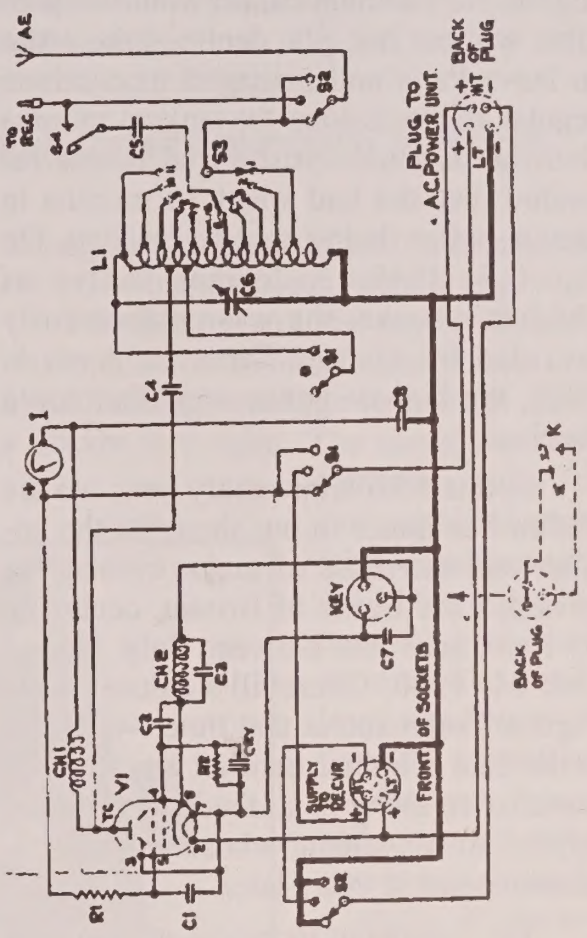
Barry Keyes, W1GSO
PO Box 2097, New Preston, CT 06777

"I am forced to stop transmitting because of inminent danger. If possible I will try to make contact on next schedule."

D-Day was already history when I graduated in June 1944 from P.S. 57 Queens, NY. V1s and V2s were raining down on England while I camped that summer with a Boy Scout troop in Smoke Hole, WV. While crystal sets were my primary interest, I tried my hand at a one-tube diode detector (1H5GT) and passed my Morse code requirement (with a flag) for First Class Scout. On Sept. 12, one day after my 14 birthday, Madeleine was transported to Dachau and executed.

During the days leading up to June 6, German radio direction finding became more effective, if only because more emphasis was being placed on its use. A cross-channel invasion by the allies would certainly be coming soon, and wireless conmunication with London by the resistance would become increasingly important to this effort.

At times, two million words each week were processed in London. Much of this was received from coded low power radio transmissions originating from the PROSPER network centered in Paris. This was serious QRP (low power) operation. Some of the radio operators sent into France were women, pianists they were called, arriving by parachute, boat, or MOON plane (Lysanders). Most were caught, tortured, and executed, but not before many had made important contributions to the outcome of the war. Alice, Cynthia, Hanna, Odette, and Madeleine were a few of the code names involved in the various forms of clandestine activity.



Theoretical circuit diagram of the British Type 21, MK II transmitter.

A pianist had, perhaps, the most dangerous of all assignments.

Madeleine was assigned to the PROSPER network which, it is believed, had been betrayed just prior to her arrival. She was the first woman pianist to transmit for the French Resistance. In June 1943 it was confirmed that most of the PROSPER network people had been captured, with all equipment but one transmitter.

Madeleine's call sign authenticated this informative radio transmission to

Continued on page 50

— QUO... QUO...

Continued from page 49

London. In spite of the fact that her network had disintegrated, she refused to give up. She was the only pianist in the Paris region. No communication would be possible without her. She declined the order to leave Paris and managed to continue regular transmissions for several months until her capture. At the trial it was revealed that she had spent 10 months in chains before being sent to Dachau. On April 5, 1949. A former writer of children's books, she was posthumously awarded the George Cross on April 5, 1949, the highest honor a civilian could receive.

In this 50th anniversary year we are inclined to honor in our thoughts the heroics and sacrifices of major events. For example, the Battle of Britain, occurring by most accounts between July 10 and Oct. 31, 1940. Churchill's salute to the Fighter Command at that time — "Never in the field of human conflict was so much owed by so many to so few." — certainly applies to Madeleine whose solitary triumph occurred years later.

The following technical information on a suitcase radio has been made available to me, courtesy of the Royal Signals Museum, Blandford Camp, Dorset, United Kingdom. Five suitcase radios are on display, four of which are British made. The Type 21, MK II transmitter circuit dated August '42 is shown on the preceeding page.

The transmitter valve is a type T II and the receiver uses one 7Q7 and two 7H7s. The transmit frequency is 3-4.5 Mc and 6-9 Mc; the power output is 6 watts on low band and 4 watts on high band; and the power supply is 6.3 volts @ 4-9 amps or 100-130 volts, 200-250 volts, 40-60 cycles AC. The receiver is a three-valve four-stage superhet with IF reaction in the second detector covering the same frequencies in two bands. Two additional units complete the four-unit package: AC power unit, (transformer/selenium rectifier type) and the non-synchronous vibrator unit. The total weight is 18½ pounds. Four pages of operating instructions are provided that emphasize the level of technical training (in addition to code proficiency) required to properly use this equipment, particularly under the extreme pressures involved.

The museum was located within an active, restricted signal installation when I visited it several years ago, and if it is still open to visitors, I highly recommend it. I have no information concerning specific equipment used by Madeleine, or any other pianist, but with the relaxation of the British Official Secrets Act in the '60s and '70s, there is surely a great deal more information available to the researcher.

Suggested reading: *A Man Called Intrepid* by Stevenson, *The Ultra Secret* by Winterbotham, and *The Quiet Canadian* (*Room 3603* in the U.S.) by Hyde. For the serious historian: *British Security Coordination Papers* (BSC), *Station M Archives* and the *U.S. Office of Strategic Services (OSS) Papers.*

Author's note: Similar activity occurred in the Pacific Theater — coastwatchers in the Solomon Islands for example. The Kennedy PT109 rescue is attributed to their activity. The equipment here, for the most part, was the 3-B-Z teleradio, a 300-pound monster, batteries, charger, and fuel not included. If someone has technical information on this equipment, an article for OTB would surely be of interest.

Suggested reading: *Lonely Vigil - Coastwatchers of the Solomons* by Lord.

TRANSISTOR TOPICS

EDITED BY

Norm Smith

7203 17th Ave., NW, Bradenton, FL 33529

Please include SASE for reply.

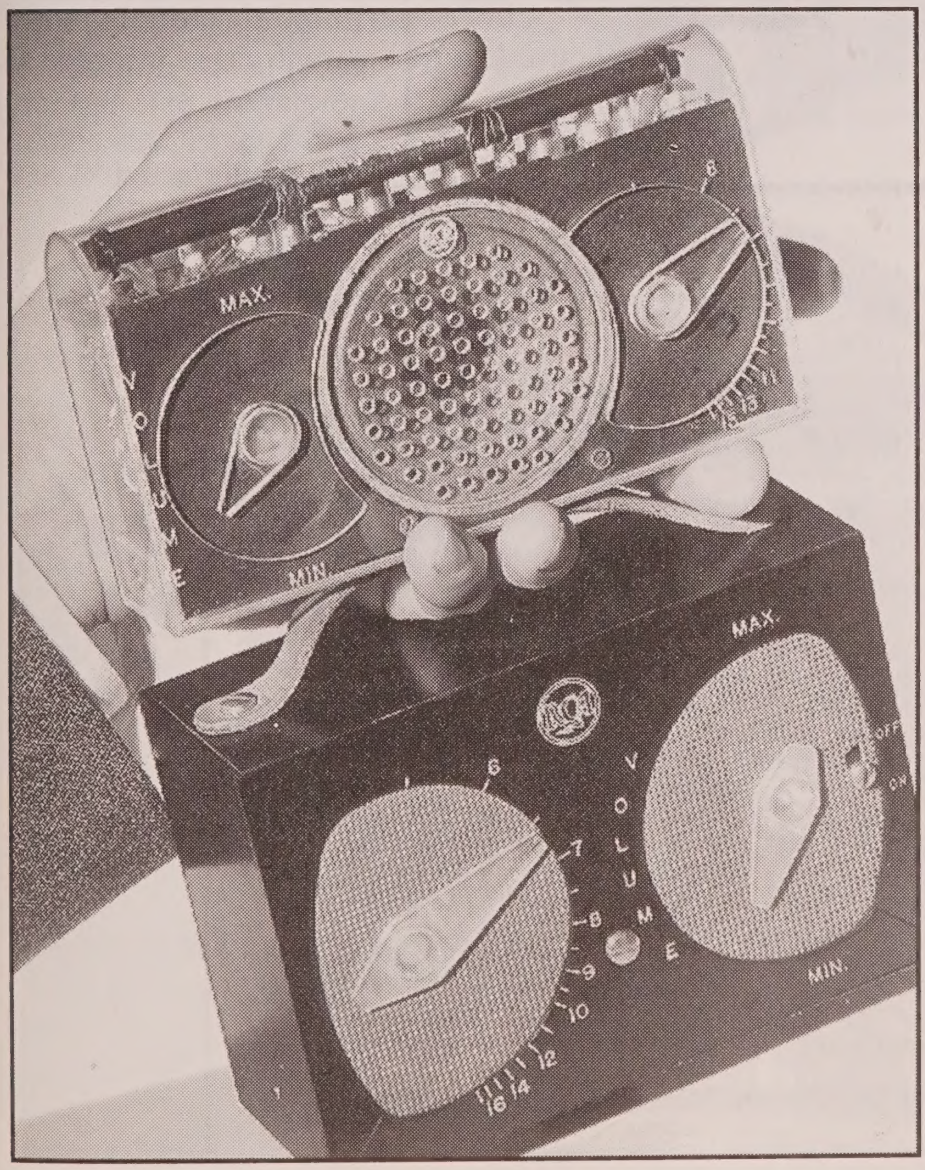
THE RCA TRANSISTOR PERSONAL BROADCAST RECEIVER PROJECT

The RCA Laboratories David Sarnoff Research Center in Princeton, NJ, was the site for the first transistor radio project at RCA. In 1953, under the leadership of engineer Loy E. Barton, a team of engineers began the project of producing several types of AM broadcast receivers using transistor technology.

For this project the major obstacle was to miniaturize the IF transformers into a small enough package in order to allow a pocket size radio. The result was a 9-transistor radio for the personal portable or pocket size set. The complement of transistors were used as oscillator-convertor — three IF amplifiers — detector-driver and a pair for audio output transistors in a class B transformer coupled circuit.

The transistors used for this project were selected from hundreds of junction-type transistors available at the time. It was found that point contact

Continued on page 52



RCA's experimental pocket-size transistor radios produced in the early 1950s.

— RCA TRANSISTOR

Continued from page 51

transistors would not oscillate at a high enough frequency for RF work. Also, the battery drain with the point contact units was quite high. With the introduction of junction-type transistors in 1951 by Bell Laboratories came the possibility of producing a transistor radio. The early RCA 2N34 junction transistors would usually only work up to a few hundred kilohertz. There were a few of these units which gave a gain of up to 20 DB at 455KHZ. These were the selected transistors which went into the experimental radios.

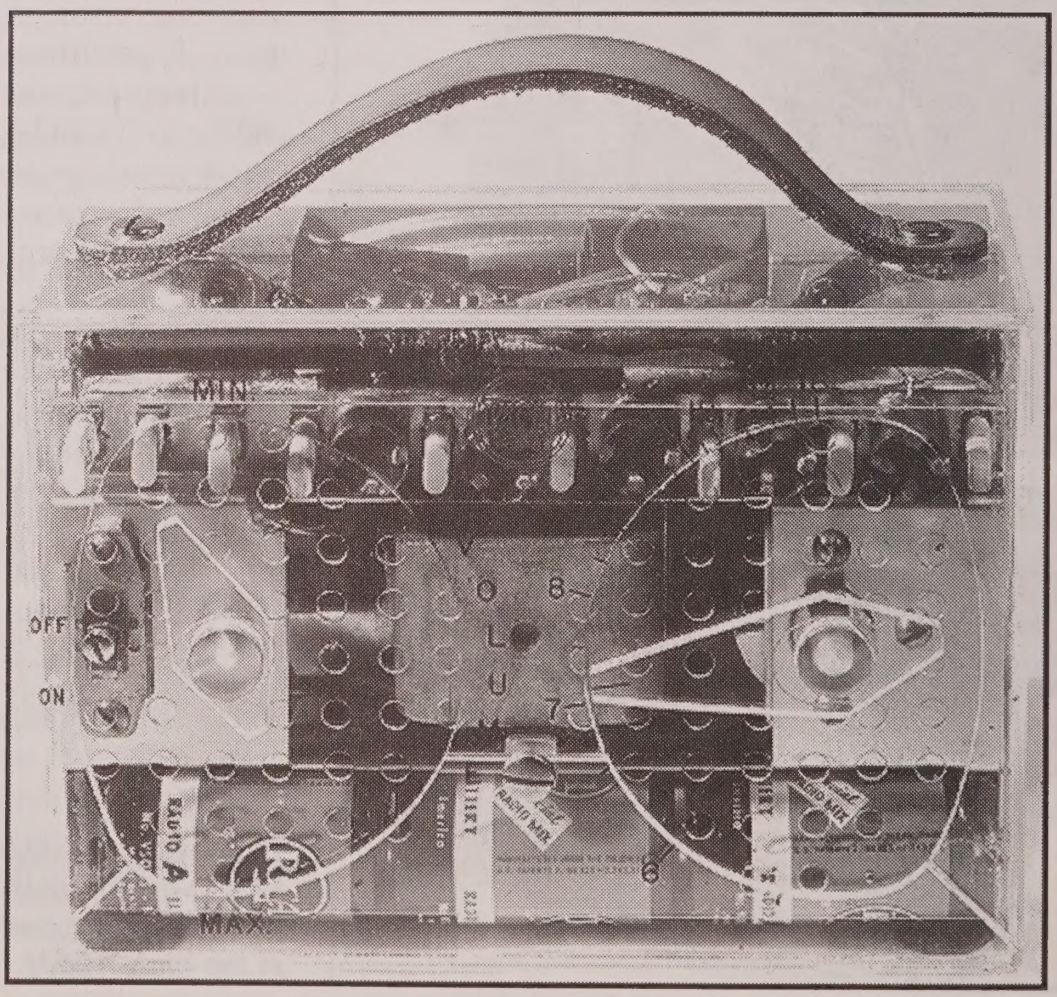
The first IF transformer design was a coil wound on a ferrite spool, with a ferrite disc located at one end of the spool. Moving this disc in or out allowed tuning of the transformer. The unit measured ½-inch in diameter.

A second, easier to tune transformer was available by the time the radios were ready for assembly. This new design had two ferrite cups with cores extending from the bottom to the open end of the cups. A coil was held between these tapered cores and allowed tuning by changing the distance between the cores. This new design measured 2/16 inch by inch in diameter.

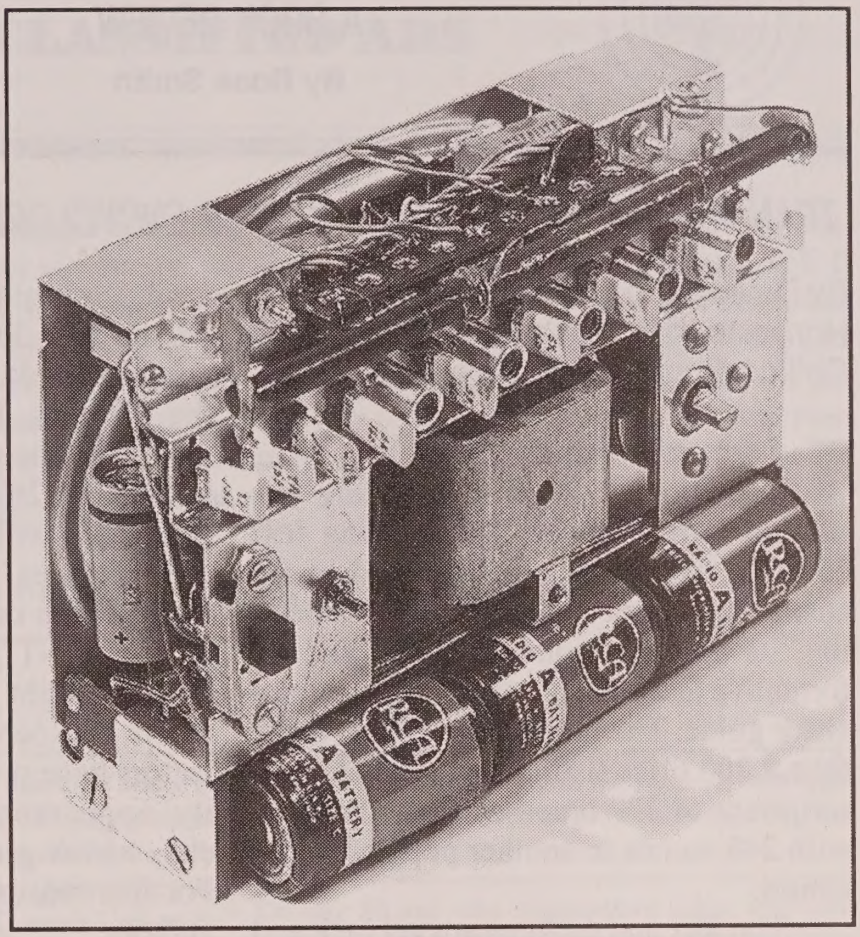
Most other components were available commercially except for the tuning capacitor which was specially made for this project.

This set when completed came with a 4- x 6-inch speaker for the personal portable model and was powered by six size C flashlight batteries. The pocket set contained a 3-inch speaker and was powered by six penlight batteries. Both sets shared identical circuitry.

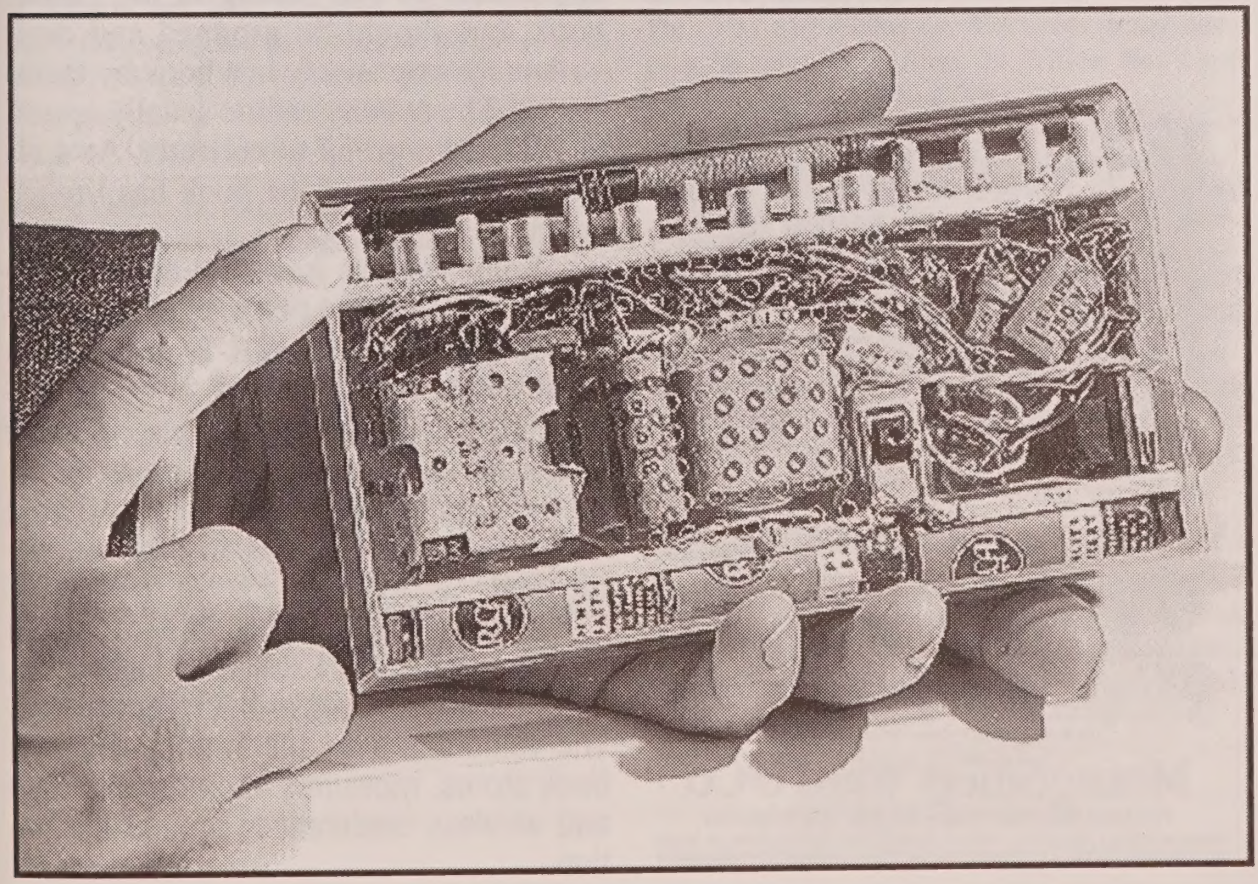
The experimental models were housed in transparent cases in order to



show the construction of these operating prototypes. This set was designed and fabricated a full year before the now famous Regency TR1. It was not until 1955 that RCA actually released this first production transistor radio for sale to the public.



The major obstacle to producing the first pocket-size transistor radios was miniaturizing the IF transformers.



A BOOK REVIEW

By Ross Smith

TRANSISTOR RADIOS: A COLLECTOR'S ENCYCLOPEDIA AND PRICE GUIDE

By David Lane and Bob Lane, Wallace-Homestead Book Co., an imprint of the Chilton Book Co., soft-cover, $19.95

It is obvious that the Lanes have done their homework well in writing this collector's guide. The opening text covering the first 13 pages, including the chapter on history and "Keys to Collecting," is the most comprehensive and informative that we have ever seen in a transistor guide. The publication covers more than 2,200 price listings and includes descriptions of 277 brand names, compared with 248 names in another popular publication.

The fact that pictures are in black and white, except for a four-page centerfold, should not deter use of this book. One can easily compare brands and study the sets' details with the clear pictures provided. As an example, the Trav-ler TR-286-B and the Truetone TR-282-B obviously originate from the same overseas source. The Sonora TR-282-B (not listed) also has the same case with the volume control knob on top. Prices listed are low on some models and high on others — especially high on the TR-1 group — compared with prices sought at the last two AWA fall meets in Rochester, NY. Individual collectors have preferences for design, quality, appearance, history, manufacturer, etc., which greatly influence appraisals. For this reason, prices vary widely with authors.

Comments have been made that novelty radios do not belong in the Lanes' book, but should be grouped and dealt with more extensively in a book by themselves. The novelty radios usually appeal to a different group of collector. As a result, this section of the book has limited appeal.

Some listings have limited descriptions, and only a few first releases are identified. Except for the TR-1, price guide illustrations suffer by lack of color listings. However, for the serious collector and historian who wants as much information as possible, this publication should be a great asset and is highly recommended.

Author's note: The help of Serge Krauss and Charles L. Miller of Elkhart, IN, in reviewing this book is much appreciated. The volume is available in antique malls, book stores, museums and at many radio and wireless conferences around the nation.

A guide to what is right and standard in Radio
Guaranteed Airline RADIO Sets and Parts
Ward's sets are easy to install
MONTGOMERY WARD & CO.
Send for your free copy
Ward's New Radio Catalogue
The 52 fully illustrated pages of this new catalogue are simply invaluable to everyone interested in Radio. And one copy is to be yours Free—merely for the asking!
It shows guaranteed Radio sets, one tube sets that give remarkable results, and sets of every variety up to Ward's new five-tube one-dial control. Think of tuning in one station after another by turning a single dial!
It shows guaranteed, tested parts, batteries, cabinets, contains a list of stations, a radio log for recording stations. It is a complete radio manual—sent entirely free!
Ward's is Headquarters for Radio
And best of all, the catalogue offers you everything new in Radio at a big saving in price.
At Ward's, everything for Radio is sold without the usual "Radio Profits." Thousands of pleased customers write us of their constant delight with Ward's Radio products.
Our 53 year old Policy
For 53 years we have sold our quality merchandise under a Golden Rule Policy. You can rely absolutely upon the quality of everything shown in this Radio Catalogue.
Be sure and ask for Radio Catalogue No. 2-R
ESTABLISHED 1872
Montgomery Ward & Co.
The Oldest Mail Order House is Today the Most Progressive
Baltimore Chicago Kansas City St. Paul Portland, Ore. Oakland, Calif. Ft. Worth

CLASSIFIED ADS

Old-time ads are free to members collecting and restoring equipment for personal use. Please observe the following: (1) one ad per issue per member; (2) include a SASE if acknowledgement is desired; (3) material must be more than 25 years old and related to electronic communication; (4) give your full name, address and zip code; (5) repeats require another notice (we are not organized to repeat automatically); (6) the AWA is not responsible for any transaction; (7) we retain the right to reduce an ad's size if over seven lines; (8) AWA does not accept commercial advertising; and (9) the deadline for ads in the August issue is June 26, 1995. Ads received after June 26 will be held for the following issue. Mail all ads to:

Richard Ransley, Box 41, Sodus, NY 14551

OLD TIME ODDS & ENDS

Book In the Shadow of the Shield (see OTB notice of Feb. 1992), illustrated hardcover, 658 pages, based on oral histories, meticulously documenting the early days of W/T and radio in Kingston, Ontario: first local amateurs (1913), origins of Queen's University radio station (1902-22), WWI local W/T training, how Marconi came to Canada, the Marconi Great Lakes W/T chain, esp. VBH Kingston. Repeat customers call it fascinating and very readable. $32.95 (Can $) or $27.95 (US $) includes postage. Arthur Zimmerman, 204-670 Sir John A. Macdonald Blvd., Kingston, Ontario, Canada K7M 1A3 (613) 542-1789

Morse Operators: Repros of Bunnell "Acme" resonators, pedestals black, hoods (drilled for main line or local sounder) available in wine red, gray, WU green or natural (varnished). Felt base, 4-foot cord. $45 includes UPS. (No CODs). Jack Proefrock, K6QEQ, 20814 S. Hawaiian Ave., Lakewood, CA 90715/TDC

Repair/Replacement of old meters before 1930. Including thermo, hot wire, and galvo types. Over 400 original stock meters and parts. Badly damaged rare meters can be restored. Eighteen years of experience in meter restoration. Leonard Cartwright, 879 Russet Dr., Sunnyvale, CA 94087 (408) 739-6025 Machine answers 4th ring.

SELL — BROADCAST

Atwater Kent Model 20, Ser. No. 203635, with tubes and speaker. Hugh Metcalf, 333 Palomar, Lodi, CA 95242

Crosley 50 one tube regenerative radio, very nice condition, $175; Philco 70 cathedral, $275; Philco 38-10T, $125; Philco 655X console, $125; Philco 89 cathedral, $150; Philco 38-89 tombstone, $200; Philco 37-610 tombstone, $75 needs minor work, pick up only. Dave Stott, 29 Willow Bee Lane, Middletown, CT 06457 (203) 344-0697

Crosley 52, excellent working condition, $900. J. Cadrecha, 292 S. Prospect St., Burlington, VT 05401

E.H. Scott 800 mahogany console, pristine condition, complete orginal ex. Rek-O-Kut turntable, $1,000; McIntosh MC-240, nice, 50 W/ch rms cont., $1,200; Hammarlund SP-600 w/manual, $200; RCA AR-67, $150; All plus shipping. Want Fisher power amps Model 55 or 90. Also Rider Vols. 19-22. Robin Lindgren, 41 Chapin Pkwy, Buffalo, NY 14209 (716) 881-1032 (no collect).

Trade Mercury Super 10, Model 27, Type SU-10 Canadian kit superhet with tubes, battery cable, etc. Looking for Leutz superhet, early Westinghouse pieces (US or Canadian) or ?? Tod Prowell, W3URG, 413 North York Road, Mechanicsburg, PA 17055 (717) 697-5227

SELL — GENERAL

Hammarlund SP-600-JX, good, $125; King Radio, excel., N/T, $125; Zenith art deco Bakelite radio model 5-R-317, good, $100. All $US, you ship. Richard Marlow, 4 Corbett Ave., St. Catharines, Ontario, Canada, L2N 5M4, (904) 934-9378

Colin Kennedy VI, "A" condition. Best offer over $435 ppd. Don Fone 8216 Cheryl Ann Ln., Jacksonville, FL 32244 (904) 771-0471

S-40, $75; SX-96, $100. Greg Richardson, WA8JPC, PO Box 405, Gallipolis Ferry, WV 25515

40-year accumulation of old radios, parts, tubes, service data. Cash and carry only. Frank Krantz, 100 Osage Ave, Somerdale, NJ 08083 (609) 783-0400

ALTEC Microphone WE 639-B, w/cable, connector, instruction book in very good condition. Ribbon OK, $600. Marcel Vallee, 703 Boul St Germain, Rimouski, Quebec, Canada G5L 3S6

Available for Parcel Post charges (COD), Radio Craftsmen RC10 AM/FM tuner and RC2 HiFi amplifier. Not tested. All tubes present, mechanical condition excellent but for broken glass cover of tuning scale. No cabinet. Brockway McMillan, PO Box 27, Sedgwick, ME 04676 (207) 359-8930

Dow Key (made in Winnipeg), heavy all brass bug, sloped upright.; AR88 new original parts: 735kc IF crystal, condensers C1 - 4700 uufd, C111 - 2700 uufd, C105 - 560 uufd; rubber mounting for Radiola III/IIIA tube sockets with installation instructions, $5 ppd.; eight Goat tube shields, $15; GE J105 chassis with speaker, original knobs, tube shields, no rust. Want Mallory (Yaxley) Radio Service Encyclopedia, Edition 2. Pay your price. Gordon Wilson, 11108-50 Ave., Edmonton, Alberta, Canada T6H 0H9 (403) 434-6257

Dual speed reproducer Model DS1 by Sandwick-Bowen Corp, $50; RadioTechnic Labs magnetic wire recorder Model 55-A, $35; Stromberg-Carlson AM/FM tuner Model DR-440, 12 tubes, 55 watts, $20; Philco 40-150 large slant front table radio, $65; GE Model 140 metal portable in v/g condition, $25; RCA BP-10 metal portable, 4 tubes, $20; Military tube tester Model 1-177-B in excellent condition with set-up book, $75 Trave-ler radio/phono Model 6040 table top, $35. Kenneth Miller, 10027 Calvin St., Pittsburgh, PA 15235 (412) 242-4701

Fisher 500B stereo receiver in good condition with spare tubes and manual $75. Pickup only. Gerald Liccione, 118 Hiawatha Trail, Liverpool, NY 13088 (315) 457-7928

Fujiya 5-inch R-R tape, #523, Japan, $25; VM Triomatic #986, $45; VM #568 AM/FM/Phono console, pickup only, $100; VM #165 amplified ext. spkr, $50; Newcomb AV-7 4 speed, portable, $50; Silvertone 45 RPM #6238, with amp. $50; Webcor changer Model B, clean, untested, $25; Admiral 6512N Bakelite R/P, pickup only, $65; Kadette 86X, $70; Farnsworth ATL 51, wood, $35; Firestone 4-A-168, $25; RCA 7HF3 dual chassis w/12 tubes, no cabinet, $20; RCA V219 cabinet, pickup only, $45. All plus shipping. Robert Rossi, 10936 Melbourne St., Allen Park, MI 48101 (313) 386-8321

General Electric transformer UV712 used in Radiola II, $12 plus shipping. Also RCA Victor portable, chassis RC 1114, parts radio, with tubes and green leather case, $10 plus 2 pounds shipping. John Uscinowski, RR 1, Box 379, Greenwich, NY 12834-9519

Grundig Model SO-290/US Deluxe console (less cabinet). stereo, 40 watts/ch. Four bands, AM/FM/SW-1/SW-2, six active loudspeakers, reel to reel tape recorder and record changer, second chassis power amplifier; 1925 Freshman Masterpiece; H.H. Scott 296; Bogen MTB-60; Mc Martin LT 252B; Roberts 990. Francis Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801 (814) 867-1400

Hallicrafter S-120 receiver, excellent condition, make offer. Roger Ruel, 10 Mabel Terrace, Queensbury, NY 12804-9198 (518) 745 1334

Kolster Model K-20 cabinet complete with claw feet and dial escutcheon. Solid but could use refinishing. $35 plus shipping. Also cabinet for Philco 37-670 console. Great shape, $30, pickup only. Nick Viania, 54 Neutral Ave., Staten Island, NY 10306

Metz 1211, $65;Grundigs: 1088, $125, 997, $100, 3090, $75, 1070, $100, 2043W, $100, 2035W/3D, $100, 5060A, $170, 2065, $50; Emud T7, $125; Nordemende Elektra 58, $75; Blaupunkt Verona, $50; Wega 809-1, $20; English Pilot Jack, $100; Nordemende Turandot, $125; GE J62, $35; RCA Stratoworld 3BX671, $75; Fada, wood, 30s, $30; Philco 54, $75; Airline 1939 lowboy, $60, RCA 56X3, $40; RCA 95T5, $50; Admiral wood chassis, battery, $20, RCA 68R3, $20, and much more. SASE for list. Gene Katz, KC6BLD, 212 Burnam Wood, Mt. Laurel, NJ (609) 866-1189

Morris coil winding machine, for winding solenoid coils, honeycomb and spider web coils, with instruction book. $75 plus shipping. J.J. Papovich, 53 Magnolia Ave., Pitman, NJ 08071 (609) 582-8279

National HRO, works. Also Heathkit Model HW 101, may need some repair. Best offers. H.D. Thompson, 9020 106 Ave. Fort St. John, British Columbia, Canada V1J 2N2

National NC-188, Airline 1929 9 tube console; Stewart Warner (1937) R402 Mountaineer, uses 6 V. vibrator; Marconiphone 11; General Electric Model J-105 10 tube chassis c/w original knobs, speaker, tube shields; Photoflash capacitors, high quality, small size 160 ufd, 330 volt, 50 for $8, 100 for $15 plus postage. Want Kemper Radio or chassis. Has three shafts. Pay your price. Gordon Wilson, 11108-50 Ave., Edmonton, Alberta, Canada T6H 0H9 (403) 434-6257

Oscilloscope RCA TMV-122-B from early 1930s; Kolster K-20 w/cabinet damage; Airline Roamer (includes speaker, 5X201A);Super-Pro, 100-400 Kc and 2.5-20 Mc with power supply (6-7-8-pin tubes) All work. Pickup only. Offers. Worthie Doyle, N7WD, 12497 Banner Road SE, Olalla, WA 98359

Rotary spark equipment, AK5 breadboard and early x-ray. Mel Rosenthal, 2304 Riddle Ave., Apt C306, Wilmington, DE 19806 (302) 425-3833

Saal & Bristol Jr. horn speakers and a couple of others. SASE for list. Floyd Paul, 1545 Raymond Ave., Glendale, CA 91201 (818) 242-8961

Tubes, schematics, service notes, Riders, Sams Photofact Folders and transistor books etc. for early radios. LSASE for price list. Sam Faust, PO Box 94, Changewater, NJ 07831

TVs — GE 10T4, $65; Motorola TS18, $95; Tetkronix Scope RM31A in excellent condition, $235; Signal Corps Keyer TG-34-A, $110; Radiola 17, $50. John Walch, Co. Rt. 17, Bernhards Bay, NY 13028 (315) 675-8135

W.E. test equipment & 18A output transformers; Sterling 402 tube tester; AMECO code practice osc. w/ 16 headsets & 2 patch boards; WWII T-17, T30 mic's, AAF & USN mic elements; headsets: J-37 & 16-M-1250 USN keys packed; aircraft dynamotors; BC 221AN Freq. Meter w/ pwr sup; telegraph senders, sounders, rec., Bunnell/Greeley; battery charger, tungar bulbs; A/B elim.; telephones, ringers, testers, Marconi 394G ships rec.; Wheatstone bridge w/gal.; Biddle megger tester, Ser. No. #1; var. caps both xmitting and receiving. Clarence Harriman, 1 Clover Lane, Bradford, MA 01835

SELL — KEYS & TELEGRAPH

1932 Boy Scout triple signal set by John R. Ryan. Superb original condition in original box with papers, tall bulb, battery. Also, nice red Niagara #16 square electric lantern by Niagara Searchlight, Niagara Falls. Prefer to trade for pre-WWII Zenith radios, literature, ??. Bill Timoszyk, 35283 Leon, Livonia, MI 48150 (313) 421-2076

Large list of telegraph items. Refundable $2 plus 2 stamps. Want JH Bunnell single earpiece headset and other old/unusual JHB items. Dr. Joseph H. Jacobs, 60 Seaview Terrace, Northport, NY 11768 (516) 261-1576, Fax (516) 754-4616

SELL — LITERATURE

General Radio collectors: Experimenter, June '48 thru 1959, in binders. Many index, price lists, and catalogs H thru Q. For info write B. Moffatt, 5714 Trail Meadow Dr., Dallas, TX 75230

1930s European radio diagrams, (6) volumes, most with year of manufacture (copies), $16 ea. plus shipping. Tube books: Radio tube vademercum, 1955, $23; Memento Tungstram, 1939, $20; Purotron tubes, $16; All copies, plus shipping.GE 1935-39 Radio Service Notes, 120 models + schematics pictured, $25. Bound. Shipping extra. Argirios Adamidis, SV2DV, 19 Kampouridi St., Panorama, Thessaloniki, Greece 55235

1930s Sprayberry Correspondence Course Lesson on Mechanical Television, 31 page copy, $13.50; 1930 Baird Mechanical Television Manual, 68 pages (34 sheets), color cover, copy, $14.50; both for $25 postpaid. Send SASE for complete 1928-1942 Zenith radio/service bulletin price list. Gary Micanek, 226 Henry Ave., Manchester, MO 63011 (314) 227-7046

1995 Price Guides: New & expanded! Crystal Radio, 1,000 listings, 31 pages, 465 models referenced to Crystal Clear. Wireless Apparatus, 750 listings, 22 pages, 500 models. Just $9.50 ea. plus $1.24 postage, large envelope. Dick Kowalski, KB8MR, 32823 Gloede Dr., Warren, MI 48093

Old radio books, Gernsback, Cockaday, magazines, catalogues, receiving and transmitting tube manuals, Riders indexes, ARRL publications, Radio Retailing, AK breadboard instruction manuals. Also cathedral,

tombstones and bakelite radios, many $25 each. SASE for large list. Bill Rolf, 30131 Center Ridge, Westlake, OH 44145

Paperback, South African Radar in World War II by Peter Brain. 229 pages, $10 postpaid. Ken Greenberg, 4858 Lee, Skokie, IL 60077 (708) 679-8641

QSL cards — worldwide ham stations, $22.50 per 100 postpaid. Frank Krantz, 100 Osage Ave., Somerdale, NJ 08083

Radio News, Radio-Craft, Short Wave Craft, Electronics World, Radio-Electronics, Electronics Illustrated, Popular Electronics, Radio-TV Experimenter, Radio, Electronic Experimenters Handbook, Radio Maintenance, Radio Service Dealer, Popular Communications, ModernElectronics, Hands on Electronics, QST, CQ, 73 and HR. Al Bernard, PO Box 690098, Orlando, FL 32819 (407) 351-5536

Radiotron Designers Handbook, 1941 RCA, $5; Fundamentals of Vacuum Tubes by Eastman, 583 pp., $8; Air-Cooled Transmitting Tubes, RCA TT3, soft red cover, $4; Principles of Radio by Henney, 549 pp., hard cover, $8 all in excellent condition; Radio Amateurs Handbooks, 1966 & 1978 good cond., $5 ea. All plus P&H. John Flanigan, RR 2, Box 455-B, Elverson, PA 19520 (610) 286-6327

Working instructions for Wireless Set #19 Mark II, $11 ppd; working instructions for Wireless set #19 Canadian Mark III, $16 ppd.; ARRL Handbook 1927 (2nd ed.), 1960, 1968, 1969 and 1970 hardcover; QST Sept. 1944 (Special edition on the US Army Sig. Corp); Radio News of Nov. 1942 (Spec. ed. fo the US Army Sig. Corp); Radio News, June 1943 (US Avaiation Com.); Radio News Feb. 1944 (US Avaiation Com); Radio & TV News Dec. 1950 (US Military Comm. on Land); Xerox copy of Technical Data up to 1964 for British, German, French and Eimac tubes, $1.50 ppd. Alfonso E. Patron, Campana 1914, Mazatlan, Sin 82000 Mexico

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Zenith Stratosphere, Scott, Hammarlund Comet "Pro" plus RCA are all featured in this collection of original reviews of the above classic radios as they were introduced to the public in the 1930s Radio magazine article, 10 pages, $4, plus $1 postage. Quality copies of radio and TV ads printed on 8½ x 11 paper; image size is 6 x 9 inches. Ads include AK (shows breadboard), Zenith Transoceanic, Freed-Eisemann, Radiola, Fada, plus others. TV ads include Dumont, GE, Zenith, Emerson, etc. Copies of construction plans crystal sets, 1, 2 and 3 tube radios as published in early '30s. Ernie Nagy, 207 S. Collier, Apt. 105 1/4, Marco Island, FL 33937 (813) 389-9101

SELL — MILITARY

Radio set AN/PRC-5, very good condition. Best offer. Roy Blair, PO Box 7400, Fairfax Station, VA 22039

Navy radio transmitting set AN/SRT-14, excellent, complete and working, w/book, .3 to 26 Mc in 10 cycle steps. Teletype equipment with HAL ST-6 Ritty terminal, tape machine, lots of paper and parts in ex. cond., w/books. Make offer, Pick-up only. I love to trade. Richard LaMark, N2TXL, 6822 Tuckahoe Rd., Williamson, NY 14589-9589 (315) 589-2552

Radio Set AN/PRC-5 for sale. Very good condition. Best offer. Roy Blair, PO Box 7400, Fairfax Station, VA 22039

Scott Military Receiver Mod. RCH (SLRF) good cond., works great, 5 bands, no cabinet, $300; National NCX-3 transceiver w/ manual & Century 400 power supply, $300; UHF Receiver AN/URR-35A, works, no case, $250; T-22/ARC-5 Transmitter w/tubes, $50; National NC-57 w/ manual, nice, works, $150; Loudspeaker LS-454/U, works, $25; RadioSonde AN/AMT-3G, mint, $75; Hallicrafters S-72-R, some scuffs, works, $100. All plus UPS, Chuck Bray, 1322 Ivy Road, Bremerton, WA 98310 (206) 373-1013 or (360) 373-1013

SELL — PARTS

Cryatal radio set kits, and parts for old style radios. Send SASE for brochure. Carl Beier, 5636 Romeyn, Detroit, MI 48209

WANTED — GENERAL

Rare, early and unusual telegraph gear, such as landline before 1870; huge old spark era keys, especially oil-break varieties; and unusual bugs (speed keys) for private collection. Gil Schlehman, K9WDY, 335 Indianapolis, Downers Grove, IL 60515 (708) 968-2320

Tel-O-Mike TO-6 or 6A capacitor analyzer, Sprague Kwik Test, Simpson Capacohmeter or similar. Henry Ergstrom, Kd6KWH, PO Box 5846, Santa Rosa, CA 95402 (707) 544-5179

Heathkit "Williamson"-type amplifier. Bill Orr, W6SAI, 48 Campbell Lane, Menlo Park, CA 94025

Admiral table model radio/phono Model 5RP4. M. Harrigan, PO Box 2741, Champlain, NY 12919

Chassis for Sparton Model 737 floor model; cabinet for Atwater Kent Model 60; Cabinet for Majestic Model 250-250M. Nick Viania, 54 Neutral Ave., Staten Island, NY 10306

Collins 75S3 in excellent shape; back side of cabinet for RCA 106 floor speaker. Will buy cabinet with bad cloth but good back. Jerry Weiss, Box 533831, Orlando, FL 32853 (407) 896-8001

DeForest Audion Valve with broken filament (no replicas!); Regency TR-1; WWI receiver (tube or crystal) and WWI transmitter (tube or spark) in any condition, WWI wireless parts like spark gaps, loose couplers, rotary sparks, coherer, etc. I will pay fair prices, covering all freight costs and if you want, I will try to help in acquiring European collectables (Volksempfanger and Loewe tubes are available). Patric Paris, Metzinger Str.8, 72581 Dettingen, Germany Fax 0049-712387673 Compuserve 100121,1035

Fisher 55A power amp, Marantz 8B tube cage, Knight Linear Deluxe power amp with 2/5881's, GZ34, 2/12AU7, chrome chassis. Mitchell Colby, 2730 Schurz Ave. J3, Bronx, NY 10465

Heathkit Lowband 1420 receiver; General Radio 269 Variometer; Manual for WE co. 3B receiver; 3-3 1/2 dial plates - 0-100 in 180 deg. rotation; Garod 6 tube (UV199s) neutrodyne, 3 dials, A & B voltmeter on right side; Manual for HH Scott Stereomaster FM Stereo & Multiplex tuner; WE Co. house magazines 1920-1928. Tad Drogoski, 507 Coal Valley Rd., Jefferson Boro, PA 15025-3703 (412) 466-5950

Horn speakers, WD-11 tubes (duds OK), small cathedrals, spark coils/gaps, pre-1926 battery sets, crystal detectors, loose couplers, Radiola III/IIIA manual (copy OK). Argirios Adamidis, SV2DV, 19 Kampouridi St., Panorama, Thessaloniki, Greece 55236 Tel. (031) 342405

Pre 1935 Buffalo, NY-built radios, speakers, parts, paper, misc. by Aragain, Branston, Federal, King, Larkin, Palmer & Palmer, USL, Wurlitzer, Carborundum Co. Also all products from Promenette Radio & TV Co. Please call or write. Thanks. Joe Pawell, N2WEO, 6 Augustine, Ave., Ardsley, NY 10502 (914) 693-9374

Radiola 26 battery plug, copy of Radiola 26 instructions, 3-inch Crosley tuning knobs as used in 50, 51, 52, XJ, 4-29. Electronic Organ tuner: Stroboconn, Strobotuner, Autotuner, etc. Dave McClellan, 1086 Trailridge Lane, Atlanta, GA 30338 (404) 399-6704

Schematic Ameco R5-A and Allied A-2516 receivers, Grebe CR-p cabinet RF coils, J.W. Miller 5495 series or similar made in 1960s, 1400 to 1700 kc IF transformers. Jerry Beaudin, RR 3, Box 2651, McMillan, MI 49853 (906) 586-3021

Schematic and dial for a Philco Model 20 cathedral radio Please state price in letter. George Hughes, W1ALL, PO Box 1054, Southwick, MA 01077-1054

SW-3 coils, 2.5V power supply (National doghouse), NC-100, AK horn speaker, SW-3 power cable to P.S.; manuals for NC-101X, SW-3. Have for trade HRO-5TA1 for older HRO. Carter Elliott, 1460 Pinedale Rd., Charlottesville, VA 22901 (804) 979-8373

Tel-O-Mike TO-6 or 6A Capacitor Analyzer, Sprague Kwik Test, Simpson, Capacohmeter, or similar. Henry Engstrom, KD6KWH, Santa Rosa, CA 95402 (707) 544-5179

WANTED — INFORMATION

Any information to help in the restoration of a tube tester, circa 1923, by RCA. Panel says "For Testing Of Radiotrons Only." Unit was in a fire but can be saved if I can get some details on the cabinet & fittings. Lane Upton, 11284 Clinton Bar Rd., Pine Grove, CA 95665 (209) 223-4638

Chandler System (about 1938) Code Course or copy thereof. Bill Turner, W2WW, 1369 Woodcrest Ave., Clearwater, FL 34616 (813)447-7707

Expertise, diagrams, info on converting TCS-12 xmtr for USS Requin restoration project. Brian Roberts, K9VKY, 3068 Evergreen Rd., Pittsburgh, PA 15237 (412) 931-4646

Information needed to build replica Marconi Coherer Stand and vibrator. Drawings, pictures or references. I have the coherer, which is 3½ inches long with 4-inch leads. Ross Smith, 1133 Strong Ave. Elkhart, IN 46514 (219) 295-7770

Information on the Klitzen Radio Mfg. Co. of Racine, WI. Was believed to have been sold exclusively by the W.F. Main Radio Co., Cedar Rapids, IA. Any information on this company or its radios would be appreciated. Kenneth Huggins, 517 Hendryx, Wichita, KS 67213-4501

Los Angeles catalogs, radio receiver models and history of people and manufacturers in 1920s and 1930s. Would like to borrow copies of Radio magazines of 1932. Will pay postage both ways. Floyd Paul, 1545 Raymond Ave., Glendale, CA 91201 (818) 242-8961

Manual or schematic for Link 205A police receiver; any equipment or manuals for police mobile radio 1930-1945. Geoff Fors, WB6NVH, PO Box 342, Monterey, CA 93942 (408) 373-7636, Fax (408) 373-2345

WANTED — KEYS & TELEGRAPH

Artifacts, memorabilia, early keys and/or any historical data, correspondence or information relating to the Vibroplex Co. Please contact Mitch Mitchell, WA4OSR, owner, The Vibroplex Co., 11 Midtown Park, E., Mobile, AL 36606-4141 (800) 840-8873 or Fax (334) 476-0465

Rare, early and unusual telegraph gear such as landline before 1870; huge old spark era keys especially oil-break varieties; and unusual bugs (speed keys) for my private collection. Gil Schlehman, K9WDY, 335 Indianapolis, Downers Grove, IL 60515 (708) 968-2320

The McElroy Collector would like to add an Albright bug and a Bunnell Gold Bug to his collection. Anything by Teddy still welcome as always. Note new address and phone. Tom French, W1IMQ, 151-B Barton Road, Stow, MA 01775 (508) 562-5573

WANTED — LITERATURE

ARRl Handbooks, 1st edition, 5th, 14th, 19th and 20th, in good condition, WA7IHN, PO Box 442, Aumsville, OR 97325 (503) 749-1149

Catalogs: Allied 1945, 1946, Walter Ashe 1948, 1955, 1956; WRL 1952-1956 & 1963. Will buy or trade from Allied, Lafayette, B.A., Walter Ashe, Cameradio and Heath catalogs or SW Craft, Radio News, Radio, Radio Craft, handbooks, ham gear and test equipment manuals, CQ, 73, QST, H.R., Sams TSMs. Popular Electronics, etc. Alvin Bernard, PO Box 690098, Orlando, FL 32869-0098 (407) 351-5536

Instruction book or copy thereof for RCA Model WO-91B oscilloscope. Harry Stavert, 7231-68th Ave. NE, Marysville, WA 98270 (206) 659-1427

Manuals for pre-War HROs, including both commercial and consumer products, for research. Also need information on the HRO-6. Originals or photocopies OK. Please indicate by postcard the date and front cover title of the manual, original or copy, and price. Thanks. Wayne Childress, 1903 Jerome Pl. #3, Helena, MT 59601 (406) 443-7255

QST 1945-1955. Will give them a loving home; Also Millen 90651 manual. Bob Napoli, K2LGO, Box 158, Riverhead, NY 11901 (516) 722-5737 evenings

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Radio boys books by Allen Chapman with original dust jackets to complete collection: Signal Island, Snow Bound and To The Rescue. Henry O'Meara, PO Box 384, Honoeye, NY 14471

Rider's Radio Volumes 18 thru 23 or will buy a complete set. Jim Berg, 4261 Wilcox Rd., Box A, Northport, WA 99157 (509) 732-4047

WANTED — MILITARY

Battery BA-70 as used with the Walkie Talkie BC-1000, dead OK; Control Box for ATD transmitter (23280) command set racks/mounts. Henry Engstrom, KD6KWH, PO Box 5846, Santa Rosa, CA 95402 (707) 544-5179

Collecting WWII radar equipment, indicators, antennas, transmitters, modulators, complete systems. Allan Weiner, 97 High St., Kennebunk, ME 04043 (207) 985-7547

Military radios and related electronics equipment. Buy or trade; dynamotors, parts kits, connectors, cables, rackmounts, aircraft instruments, military clocks and chronometers. Charles Di Cecca, KA1GON, 501 Mystic Valley Pkwy., Medford, MA 02155 (617) 396-9354, Fax (617) 395-5835

WANTED — PARTS

Main tuning knob for National RAO-7; crystal lattice filter for SR-150; shock mount for BC-348. Greg Richardson, WA8JPC, PO Box 405, Gallipolis, Ferry, WV 25515

"Coupling" and "Ind." knobs for RCA (GE) Tuned Coupler Model 1529. Richard Howard, 9999 S.E. Frenchacres Drive, Portland, OR 97266 (503) 775-6697

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6 kHz Collins mechanical filter, type F-455-FA/K/N/Y-60, preferably "N". Also wanted wooden knobs for Stromberg Carlson radio type140/160/180. Will pay ALL expenditures. R. Wieschhoff, 7,rue du Debuche, F 78120 Rambouillet, France Tel. 33-1 304 111 02

Ampex "Master-Electronics" for Ampex Model #AG-350 tape deck. Also need stereo head assembly for above deck. Gaylord Ewing, PO Box 144, 19 E. Main St., Morris, NY 13808

Audio output transformer for SX-28 or suitable alternative with 8 ohm output. Also need manual for Multi-Elmac AF-67. Kurt Wehle, WA4SMI, 608 Jackson St., Falls Church, VA 22046

Audio interstage transformer, sgl. plate/sgl. grid. Prefer such as UTC Sub/Subouncer SO-2-SSO2 3:1 ratio. Could be from tube type hearing aid. In lieu of above, SNC IP323, Merit A2910, Peerless Q306C, Chicago IN-10 or Crest 6302. Bob Hartzel, 6523 Maple Ave., Merchantville, NJ 08109 (609) 662-0653 nights.

Base driver for Reichman Chicago, IL, horn speaker. Prefer good condition and working order. Don Maurer, 29 S. 4th St., Lebanon, PA 17042

Cabinet, front panel and dial bezel for Grebe AC6 receiver. H.E. Spaulding, 1567 Lilac Way, Upland, CA 91786 (909) 981-1448

Collector looking for pre-1960 theatre and sound equipment, old transformers, speakers and homebrew amplifiers. Mike Somers, 2432 W. Fargo, Chicago, IL 60645 (312) 338-0153

Dial glass for Motorola 5Y console, or complete chassis with same. It is rectangular glass with red and green numbers for AM/SW. Will pay too much, reimburse stamp and pay shipping. 5 Y is not a high dollar radio, but it belongs to my mom, has had it a long time and I broke it. Thanks. R.B. McEntire, 307 Muirwood Lane, Sugar Land, TX 77478

G.R. Type #299 socket for UV-199, G.R. Type #303 or #317 4" dial knob, three rheostat knobs (type with center screw) used by Westinghouse on such as Aeriola Sr. and DA units; brass based WD-11s (good or duds); front cover or complete cabinet for Radiola II. Lane Upton, 11284 Clinton Bar Rd., Pine Grove, CA 95665 (209) 223-4638

Majestic 15 chassis; knobs for Crosley 02CA. Joe Bentrovato, 1802 Sagebrush Rd., Plant City, FL 33567 (813) 754-3856

Old tube amps, speakers by Altec, Jensen, JBL, transformers by UTC, Peerless, Thordarson, etc., National Speech Amplifier. Mike Somers, 2432 W. Fargo, Chicago, IL 60645 (312) 338-0153

Parts for a Clapp-Eastham Model HR; two dial knobs, one labeled "Tickler", the other "Condenser," see Alan Douglas Vol. 1, Pg. 104; For a Colonial New World Globe Radio, one knob and the north pole piece; For a Federal Model 110, a complete cabinet. L.H. Swackhammer, VE3IIA, RR#2, Alma, Ontario, Canada N0B 1A0

Philco 70 speaker; McMurdo Silver 701 transmitter. Larry Flegle, N4TMW, 210 Wylie Lane, Woodstock, GA 30188 1 (800) 298-0765

Range selector box or schematic for pre-WWII Hoyt VOM with 7 in. meter. Kenneth Hodge, KB4CM, 42846 Cinema Ave., Lancaster, CA 93534-6229 (805) 945-4702

Shadow meter and Tube Shield for Philco 91 Console. David Stott, 29 Willow Bee Lane, Middletown, CT 06457 (203) 344-0697

Tone control for Philco Model 53-960 radio. Philco p/n 33-5566-38 (Clarostat p/n AG-85-S, Mallory p/n U-67) 5 meg, 1/2 watt; Phono cartridge (Shure crystal pickup P-81) for Sears Silvertone Chassis No. 456-300. Don Nelson, KF0UU, 1800 Brittany Rd., Hastings, MN 55033

Wanted for Philco 39-40 Code 121 broadcast radio: 1st IF transformer #32-3079; 2nd IF transformer #32-2582; dial pointer #56-1033. NOS perferred, good condition pulls ok. Allie Lingo, PO Box 118, Dierks, AR 71833-0118

Collector seeking a Zenith console known as the "New Zenith DeLuxe Chinese Model." G.M. Simpson, Four Seasons, 16 Thorpe Hall Close, Thorpe St. Andrew, Norwich NR7 Oth, Norfolk, Great Britain

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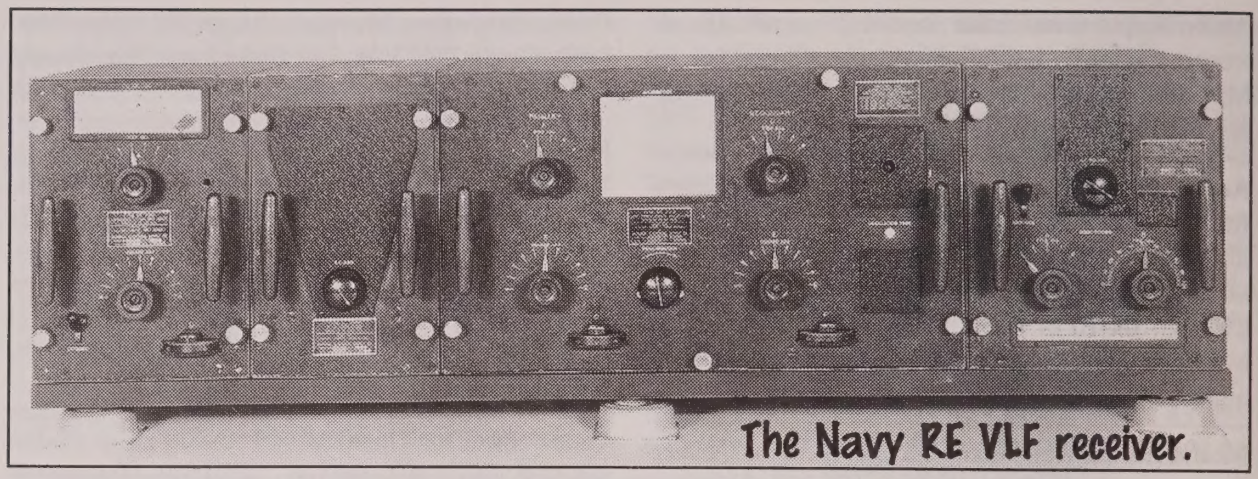
Early transistor radios by Sony, Toshiba, etc. Will pay your price or have trades such as Brown speaker, battery sets and tubes. A. R. Nolf, VE3NLF, 539 Kastelic Pl., Burlington, Ontario, Canada L7N 3S9 (905) 333-4557 or E mail 932998GMUSS.CIS.McMaster.CA

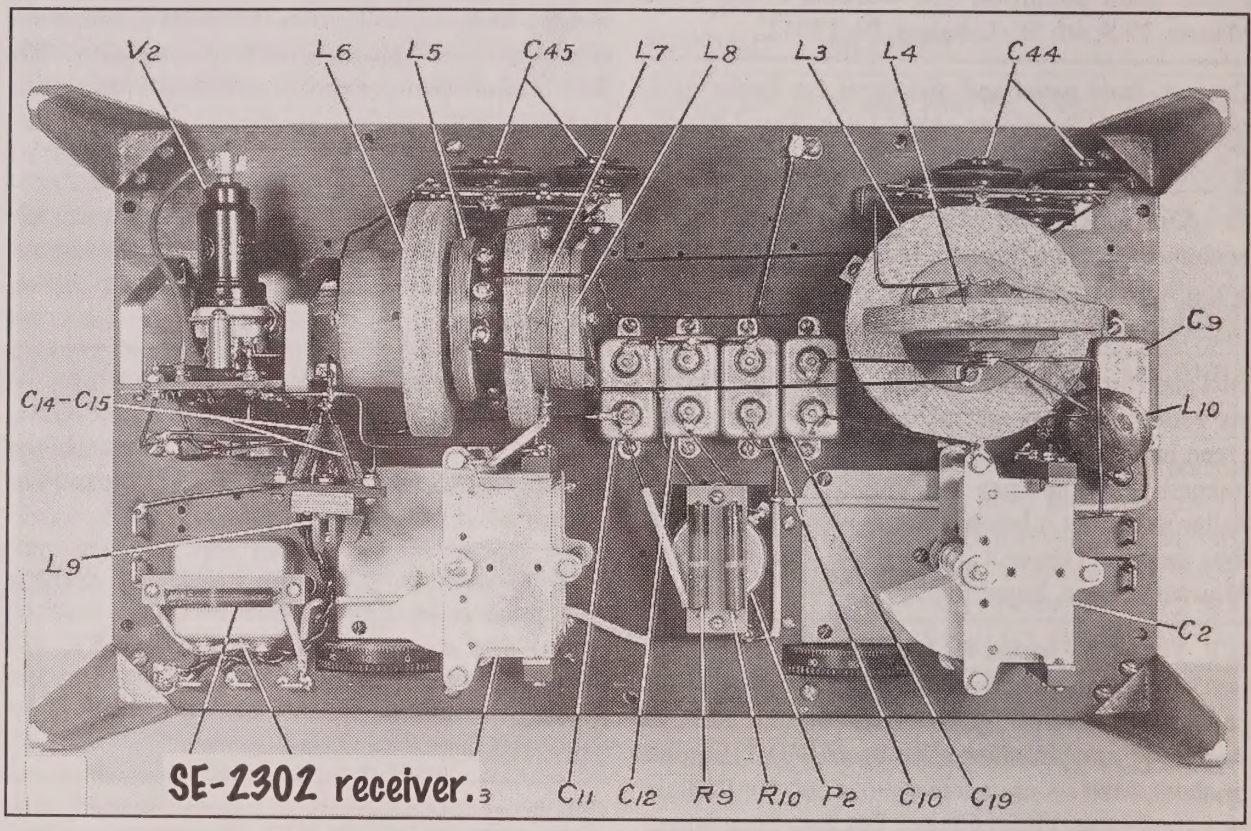
Galena crystals; schematic of a crystal set with variable coils with tickler and two variable capacitors with trimmer. Also need headphones. Roger Ruel, 10 Mabel Terrace, Queensbury, NY 12804-9198 (518) 745-1334

Would like to buy an "International Rectifier Solar Power Radio". I believe this kit was made in the 1960's. Eric Hildebrant, 73 Springfield St., Watertown, MA 02172 (617) 258-3216

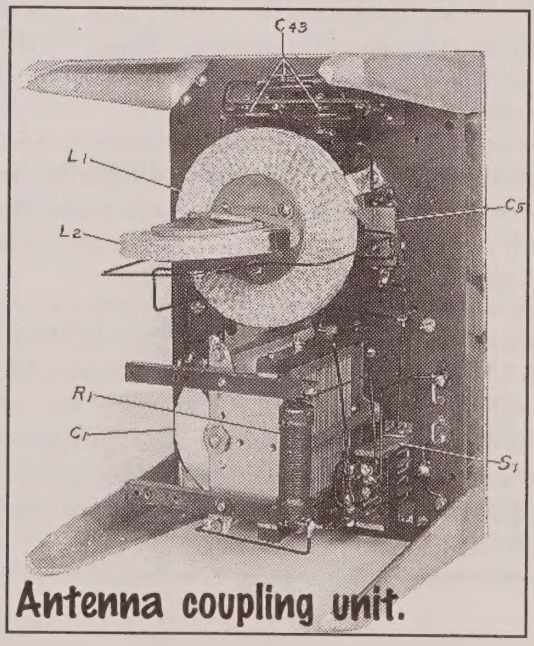
Tubes: 2A3. 5AR4, 6A3, 6B4G, 6CA7, 6L6GC, 10, 12AX7, 45, 50, 245, 250, 300A/B, 310A/B, 350A/B, 801, 5881, 6550, 7591, KT66, KT68 and many tubes made by Western Electric; Also microphones, tube amplifiers, compressors, limiters, equalizers and guitars. Don Singerhouse, PO Box, Maywood, NJ 07607 tel/fax (201) 843-8682



The Navy RE VLF receiver.



SE-2302 receiver.3



Antenna coupling unit.

— NAVY RECEIVER

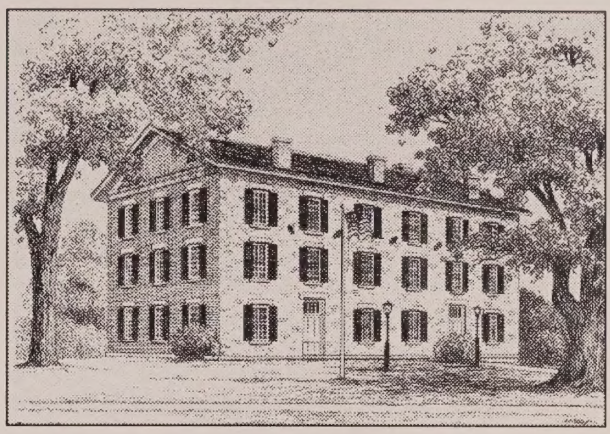
Continued from inside back cover

of the receiving unit contained a regenerative detector for grid tuning. The RE model was replaced in 1940 by the RBL and later VLF sets.

The RE receiver is pictured on page 408 of Howeth's book *History of Communication Equipment in the United States Navy."* This and other pieces in the AWA Museum are described in a written report by L.A. Gebhard of the research laboratory.

THE MUSEUM

NAVY MODEL 'RE' RECEIVER



Through the efforts of Cmdr. Ed Redington, W4ZM, the AWA has been given a large collection of early Navy equipment from the Naval Research Laboratory and the Washington Navy Yard. Four large filing cabinets with equipment manuals completed the acquisition. The time period covered is 1923 to 1945. Pictured on the preceeding page at top is the rare VLF receiver Model RE with a tuning range of 10 to 100 kc. The AWA also has a companion Model RF with a 75 to 1000 kc range.

The RE receiver consists of four sections, a common design in the 1920s. Also pictured is the SE-2301 antenna coupling unit (bottom), and the SE-2302 low frequency receiver. This receiver was designed by NRL in 1925 for the Navy, and was manufactured by the National Electric Supply Co.

Faced with the possibility of naval warfare in the late 1930s, the Navy found a need to update VLF equipment, much of which was used for submarine communication. The RE and RF sets were likely candidates because of their design and ruggedness. Modernizing consisted primarily of changing the original battery-operated WE 215-A (Type "N") tubes to the all-metal types. The modified RF amplifier contained one tuned RF stage; tuning the grid was accomplished in the so-called antenna coupling unit and in the plate circuit of the receiving unit. In both the old and new models, the secondary circuit

Continued on page 62

AWA Electronic Communication Museum

FREE ADMISSION

Location: Village Green, Rts. 5 & 20, Bloomfield, NY.

Hours: May 1 through Oct. 31 — Sunday, 2-5 p.m.; also, June 1 through Aug. 31, Saturday, 2-4 p.m. and Wednesday, 7-9 p.m. (Closed holidays.)

Group Tours: By appointment.

Museum Telephone: (716) 657-6260

Amateur Station: W2AN

Mailing Address: Bruce Kelley, Curator, 59 Main St., Bloomfield, NY 14469

Mystery Photo

Who this person was and where this station was established has probably been lost to time. The only clue is a barely readable sign on the window (left) that states, "Radio Station KPE." The only known factors are that the era was when people dressed to go to work and the time the picture was taken — 4:19, and in the afternoon judging from the light outside the window. Does anyone have information or a guess about KPE? Considering the equipment, when might the picture have been taken?

(Photo courtesy Pemco Webster & Stevens Collection, Museum of History & Industry.)